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JPRS Report

Environmental Issues

Environmental Issues

JPRS-TEN-90-012

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CSFR Delegation in Sweden for Environment Conference

LD0209164290 Prague CTK in English 1452 GMT
2 Sep 90

[Text] Ronneby, Sweden, Sept 2 (CTK correspondent)—A Czechoslovak delegation led by Federal Government Minister and Chairman of the Federal Committee for the Environment Josef Vavrousek arrived here today to take part in a two-day international conference on the environment of the Baltic Sea.

Convened by Swedish Premier Ingvar Carlsson and his Polish colleague Tadeusz Mazowiecki, the conference will be attended in addition to Czechoslovakia and Sweden also by Denmark, Finland, the FRG, the GDR, Norway, Poland, and the European communities.

The environment of the Baltic Sea is to a large degree influenced by the waters from rivers flowing into it from the states situated on it. Counted among them can be also Czechoslovakia, since some rivers emptying into the sea have source in its territory and since pollutants are taken by wind from its territory to the sea.

Polish Premier Addresses Baltic Ecology Conference

LD0209212290 Warsaw PAP in English 1935 GMT
2 Sep 90

[Text] Ronneby, Sept.—In an address delivered at the Conference on Environmental Protection of the Baltic now taking place here, Polish Premier Tadeusz Mazowiecki stated in part:

"We are all aware of the ongoing degradation of the Baltic's environment, of the need for urgent and coordinated action to stop and reverse this process. This lies in the interest of all of Europe. Our action cannot be fragmentary, it must cover the whole ecological system of which the fortunes of our nations depend. I propose that a special high-ranking task force be set up to draw up a complex program of saving the Baltic."

"In the final declaration we will oblige ourselves to cut by a half the emission of hazardous substances to the Baltic before 1995. This great and necessary task will pose many difficulties for Poland and could turn out to be unrealistic without significant financial and technological assistance from the outside."

Mazowiecki appealed for such aid, at the same time thanking those governments which have already extended it. He also proposed the establishment of a Baltic protection fund and a joint system of measurements and research on the Baltic's environment. Moreover, Poland proposes to set up a joint centre for countering catastrophes caused by big oil spills in the Baltic. "In matters pertaining to the protection of its environment, our countries could present a joint stand, for instance at the forum of the International Maritime Organization," the premier said.

Departing from environmental matters, Mazowiecki drew attention to the need to speedily overcome the anomalies associated with the division of Europe. To this end he proposed convening a conference of ministers of transportation and shipping in 1991. "Poland is open to all forms of cooperation, especially economic. The Polish Government is well disposed toward and supports the idea of holding a conference of cities and villages of states bordering on the Baltic," Mazowiecki stated.

Premier Mazowiecki held bilateral talks within the framework of the Ronneby meeting with Denmark's Premier Poul Schlutr. The Danish premier confirmed the invitation for Mazowiecki to visit Denmark still this year. Denmark pledged to help Poland enter the Council of Europe and decided to earmark a part of its natural environment protection fund, amounting to 500 million kronas [Kroner], for Poland.

A representative of the World Bank attending the conference in Ronneby declared the bank's willingness to assist the program of improving water quality in the Vistula and Odra Rivers.

The heads of the two German delegations, East German Premier Lothar de Maiziere and West German Minister Klaus Toepfer, delivered declarations on the inviolability of Poland's western border. Meeting the press, Polish Government Spokeswoman Małgorzata Niezabitowska stressed the significance of these statements.

Niezabitowska also announced that Premier Mazowiecki would prolong his stay in Sweden by several hours, leaving for Stockholm on Monday to hold further bilateral talks.

The absence of Soviet Premier Nikolay Ryzhkov and West German Chancellor Helmut Kohl at the conference in Ronneby attended by the premiers of Sweden, Poland, Norway, Denmark and Finland, is notable.

Appearing on TV, Swedish ecologist Eric Brammer used harsh words to criticize the Polish Ministry of Environmental Protection for acting too slowly. Brammer also accused Poland of wanting to use the sum of 300 million kronas [kronor] for not ecological, but chiefly industrial, goals.

Poland's Minister of Environment Protection Bronislaw Kaminski rejected Brammer's accusations. He stated that his ministry has not received any money yet, but did pay 100 million zlotys to a special fund under an agreement of May 21, 1990. Asked what he thought of Brammer's attacks, Kaminski suggested that the former simply was unable to account for the money he managed (that is the first installment of a million kronas). Brammer was the coordinator of Swedish aid for Poland, a post from which he recently resigned.

Polish Premier Interviewed on Baltic Conference

*LD0309191890 Warsaw Domestic Service in Polish
1700 GMT 3 Sep 90*

[Excerpts] In Ronneby in the south of Sweden the conference of Baltic states devoted to the protection of this most polluted sea has ended. A declaration of cooperation has been agreed, and a working group has been appointed to calculate how much money will be needed until 1995 for the renewal of the Baltic. [passage omitted] After the conference, Premier Mazowiecki went to Stockholm. Before his flight, he answered questions from Polish journalists, among whom was Stanisława Stec:

[begin recording] [Stec] I understand that the conference was a political success for Poland. Was it also an economic success?

[Mazowiecki] As far as the second question is concerned, only time will tell. There were representatives of very serious financial organizations here. They declared their readiness to give quite substantial aid to all those plans, and now, I think, that much will depend on whether the actions are initiated successfully. I think that Poland in particular should propose certain concrete plans which could be implemented thanks to those financial contributions which were discussed during the conference. I think that in general the assumptions have been realized, although the absence of Lithuania is an essential lack here, and I would like very much—as I have stressed all the time and everywhere it was possible—that they be included in further work. But on the whole one can say that the assumptions have been realized.

I think that it was a very important success for Poland because it was a co-initiator of this meeting, and second, I consider it a success because the work of this working group is to start relatively soon. I also put great emphasis on our presence there with our very concrete plans, so that we were able to take advantage of the atmosphere, and that Polish plans for environmental protection could be seriously taken into consideration. [passage omitted]

We also raised other matters. For example, as far as Norway is concerned, we discussed the possibility of the construction in the future of a pipeline which would supply gas to Poland from the North Sea. The project has met with interest on the part of the Norwegians. The matter will be examined further. I think that a very open attitude of the Nordic countries toward Poland and their interest should be cultivated further by us. Therefore I decided to delay my return to Poland by a few hours and drop in to Stockholm. Firstly because I would like to, as it were, end my talks with Premier Carlsson. Second, because being here, and not envisaging an early visit to Sweden, I wanted to put a pro-Swedish accent by my presence in Stockholm. [end recording]

Baltic Conference Issues Declaration

*LD0309192690 Stockholm Domestic Service in Swedish
1600 GMT 3 Sep 90*

[Excerpts] Today the Baltic Conference ended in Ronneby. In the final declaration all the Baltic states promised, together with the World Bank, for example, to form concrete plans on how the cleaning of the Baltic will take place. [passage omitted]

Estonia and Latvia took part in the conference and signed the final declaration, but Estonian Foreign Minister Lennart Meri points out that Estonia's negotiating freedom is restricted as long as the Soviet Union has full control of Estonian enterprises.

[Begin Meri recording, in English] Mr. Ryzhkov's deputy prime minister signed a decree under which the Estonian industry is put under direct Moscow leadership...[end recording]

As long as we do not have full independence, we cannot decide on cleaning measures to rescue the environment of the Baltic, Foreign Minister Meri said. In other words, this conference also illustrates the sensitive national Baltic question. Lithuania is not participating at all in the conference and the government heads from West Germany, Soviet Union, Estonia, and Latvia did not come either. [passage omitted]

Soviet Official Comments on Danube Pollution Conference

*90WN0245A Kiev PR IVDA UKRAINY in Russian
20 Jul 90 p 2*

[Interview with Mikhail Ivanovich Lavrinenko, chairman of the Izmail Gorsoviet Permanent Commission for Environmental Protection, by M. Libizova: "Danube, Danube, Know What Gift Thou Art Receiving!"]

[Text] **M.I. Lavrinenko, chairman of the Izmail Gorsoviet Permanent Commission for Environmental Protection, recently returned from Belgrade, where he had taken part in the International Conference of Mayors of Cities Along the Danube on Problems Arising in the Prevention of Pollution of the Danube's Waters.**

[M. Libizova] Mikhail Ivanovich, they say that your report evoked particular interest in Belgrade.

[M.I. Lavrinenko] The Danube is in danger. This river, which flows through eight states, suffers from pollution. Over the last 25 years the mineralization of water in its lower course has increased by a factor of 1.3. In 1988 the pollution level of the Danube's water had already exceeded the fishing-industry norms for zinc by a factor of as much as 30, copper—22, and iron—6. There are large concentrations of lead, manganese, chromium, and mercury. With regard to pesticide poisoning, the Danube has "oudone" the country's other major rivers. Izmail and Reni are the only two ports on the entire Danube

where navigational facilities take on polluted water in order to purify it. Aside from ourselves, only Vienna, Belgrade, Bratislava, and Budapest have been equipped with trash containers along the river banks. Therefore, anything and everything flows along the river; the degree of fecal pollution is extremely high. For example, our city beach has been closed down: the water is dangerous to our health.

[M. Libizova] What must be undertaken in this situation?

[M.I. Lavrinenko] Juridically speaking, nowadays one state cannot levy fines on another state because of damage or harm inflicted on its nature or its people. For example, we are constantly complaining that petroleum is coming over onto our section of the Danube from the Romanian side. We send our data to the Goskompriroda [USSR State Committee for Environmental Protection], from which it, most likely, goes to the USSR Ministry of Foreign Affairs. And there...the entire matter ends. There is no feedback. There is not even any monitoring of the water quality. But, of course, each country should discharge from its own territory water of just the same quality as it has received from its neighbor along the Danube. We, however, receive the "spills" or "overflows" from all of Europe. What we need, therefore, is a convention which would provide norms and a procedure for the drainage and runoff of wastewaters, as well as measures of responsibility for pollution. Its signing would be a lengthy, drawn-out affair. For example, the international convention for preventing the pollution of the sea from ships was worked out in 1973 but did not go into effect until 1983.

[M. Libizova] But, of course, conditions nowadays for international cooperation are quite different and more favorable.

[M.I. Lavrinenko] Yes, even the Romanians at this conference were no longer saying, as they used to ordinarily: "The Danube does well on its own; don't make any tragedies about this matter. Ceausescu is looking after us." Cooperation on a municipal level could begin as early as tomorrow. For example, we could come to an agreement on setting up a sufficient number of reception or intake facilities in all ports for the purpose of removing polluted water and trash from ships. We could also agree to solve the problems of washing out holds after they have been used to haul ores, blends, charges, phosphates, and other bulk cargoes. But, of course, you understand that this can be achieved only by finding a "common language." The United States Coast Guard simply does not allow ships lacking in equipment which measure up to their requirements to enter its ports. So far, an analogous situation has been impossible on the Danube. Therefore, we must seek agreement and mutual understanding based on a shared concern for the condition of our "river of friendship."

[M. Libizova] But cannot we ourselves do something to secure ourselves?

[M.I. Lavrinenko] During the days when the gorsovet's first session was taking place I was informed that a Turkish ship had spilled some petroleum-polluted water in the waters of our port. The maximum that our harbormaster could do on legal grounds was to fine the violator a total of...70 dollars. The Turkish captain literally flung this money down and sailed away in a splendid mood. But if we had had the appropriate decision from the gorsovet, we would have been able to fine him in the amount of 250,000 or 300,000 dollars. Moreover, this money would not have gone into the all-union "purse," as has been the case up to now, but rather into the city budget. Now a law has been passed which provides for fines to be imposed on enterprises for discharging harmful substances into the environment. So far we are not prepared to use it to the full extent, since we have not made an inventory of the sources of discharges at every enterprise. But if such a law were to be effective, there would also be funds available for environmental-protection activity; there would be a "stimulus" or "incentive" for enterprises to eliminate harmful substances and practices. For example, an ideal situation would be to make the transition in all ports to an enclosed hauling of bulk cargoes, or to hauling them solely in packaged form. But up to now this is not the case, and, meanwhile, there is still a "planned percentage of cargo spillage into the water" (and this amounts to thousands of tons per year); we must adopt a decision obligating hauls of bulk cargoes to be made under the observation of monitoring organs, with a compilation of legal acts for each such operation and a subsequent drawing up a fine which may be imposed on an enterprise and drawn from its profits.

[M. Libizova] By the way, speaking about monitoring organs: it would be impossible to set an observer over each Turkish or other ship

[M.I. Lavrinenko] Nor is this even necessary. Our own sailors, who are the most motivated with regard to monitoring, immediately transmit reports about any instance where norms are violated. And, after all, the Committee for Environmental Protection for the city of Izmail and the rayon is still charged with the duty and obligation of being concerned with the purity of the Danube, whereas the Special Inspectorate for Environmental Protection of the Black Sea is located in Odessa. Go there and report! But these problems can and must also be solved at the gorsovet level and along the channels of the Goskompriroda....

[M. Libizova] From everything you have said one could draw the conclusion that the struggle to protect the environment can be waged successfully only by everybody working together, by combining the efforts of countries, cities, enterprises, organizations, and even individual persons.

[M.I. Lavrinenko] Otherwise it is not even worthwhile to begin.

[M. Libizova] But if we are to begin just on our own....

[M.I. Lavrinenko] Yes, I think that our top-priority task is to create an association and work out an ecological program for restoring health to the Danubian region primarily in our own country. We can struggle as much as we want in our own city, but if, for example, toxic wastes are discharged from the checkerboard-shaped rice fields at the Danube's estuary, we too will not have achieved success. Just look at the following: What kids don't like to run through puddles after a summer shower! When I was a boy, I used to do that too. But I wouldn't advise anybody to do such things nowadays. Our rains are characterized by corrosive acidity, a very high level of mineralization, as well as increased contents of nitrates and phosphates.

[M. Libizova] And so, the Apocalypse is not way off beyond the hills?

[M.I. Lavrinenko] Not if we sit with our hands folded. We must act. I think that we would all support the proposal to convoke a conference of the Danubian countries on protecting the Danube's waters; we will be writing letters in the name of the gorsovet to the governments of the entire country and our own republic, as well as to our president. At the next conference there will be a discussion of the following matters: founding an international association of Danubian cities, and ecological council, and a scientific center for Danubian problems. The task of working out the appropriate positions or statutes has already been assigned to various countries. We must approach this matter very constructively. I am convinced that developing a common-European program for saving one of the world's most beautiful rivers will allow us to more effectively solve the specific problems of restoring the Danube to good health.

Soviet, Finnish Foreign Ministers Discuss Baltic Environment

*LD0909122890 Helsinki Domestic Service in Finnish
0600 GMT 9 Sep 90*

[Text] The protection of the Baltic Sea and the reduction of industrial emissions in the Kola Peninsula were discussed in talks between the Soviet and Finnish foreign ministers yesterday evening. Eduard Shevardnadze and Pertti Paasio both stressed the importance of cooperation in the solution of the problems. The foreign ministers exchanged views, among other things, on the recent Nordic premiers' meeting in Sweden to discuss protection of the Baltic Sea. In their talks at the Foreign Ministry, Shevardnadze and Paasio also discussed the situation in the Persian Gulf.

Finnish Newspaper Demands USSR Environment Action on Kola Peninsula

*90WN0209A Helsinki HUFVUDSTADSBLADET
in Swedish 29 Jun 90 p 2*

[Roundup of editorials excerpted by HUFVUDSTADSBLADET: "Time To Demand Action"]

[Text] It is time for Finland to demand concrete measures by the Soviet Union to save the environment, according to the Uleaborg newspaper KALEVA (independent).

"The Soviet authorities still do not take their own environmental problems seriously. Finland, for its part, is not making strong enough demands for genuine action by the Soviet Union. On top of everything, it has been learned that the so-called Vanyukov method has not been tested in nickel processing. The Soviet authorities want to use this method to reduce sulfur emissions on the Kola Peninsula. The method has been tested only in connection with copper processing, where it has been used to reduce emissions only by 55 percent."

"Outokumpu can now offer tested technology to reduce sulfur emissions on the Kola Peninsula by up to 98 percent. The technology can also be put to use quickly, i.e. by late 1983."

"Why does Finland not strongly demand that the proper technology be put to use on the Kola Peninsula? Even though the decision must finally be made by the Soviets, environmental issues are no longer national matters, but common matters. Finland should offer such significant economic support that the Soviet Union cannot say no."

Scandinavian Business Opportunities Stemming From USSR's Kola Cleanup Noted

*90WN02424 Oslo AFTENPOSTEN in Norwegian
31 Jul 90 p 6*

[Article by Ole Mathismoen: "Environment Catastrophe Is 'Gold Mine'"]

[Text] The environmental catastrophe on the [USSR's] Kola Peninsula can become a gilt-edged business deal for Norwegian and Finnish industry. Elkem can end up with rebuilding contracts for nickel factories worth several hundred million kroner.

According to the Soviet Novosti Press Agency, operations at the two big Severonikel and Pekhenganik factories resulted in sulfur discharges on the order of 500,000 tons in 1988. According to the Norwegian National Pollution Inspectorate, those discharges amounted to "only" 270,000 tons. It was a lot, in any case. By comparison, Norway's entire discharge of sulfur in 1989 was well under 100,000 tons.

It is a fact that the Soviet Union itself will not be able to make the enormous investments that will be necessary to reduce the sulfur discharges sufficiently. The factories must be completely rebuilt, with new smelting processes. The price will be at least 3,000,000,000 kroner.

Three different processes are under consideration. Since the sulfur content of the ore that is being used is high, it is very important that a so-called autonomous smelting process be used. That means that the energy in the sulfur will be utilized instead of bringing in electricity. Two of the three processes are based on that technology. One of

the two is a Soviet process, and the other belongs to the big Finnish Outokumpo concern. The Soviet process is hardly as "clean" as the Finnish one. Elkem's process with electronic smelting is the least up-to-date one. The choice of a technology will probably be made in September or October 1990.

Elkem Far Ahead

But even if Elkem loses the fight for the right to supply the main ovens, the Norwegian company's chances of obtaining big contracts are good. Several smelting units are to be built. After the main process, so-called circulation ovens to collect slag, etc., are to be installed. In addition, stack gas from the installations is to be further cleaned of particles and sulfur. In all these fields, Elkem's technology is among the best in the world.

The most important reason why Elkem—and other Norwegian sub-supplying plants—will have a chance of obtaining good contracts, however, will be direct involvement by Norwegian authorities. State Secretary Kai Eide in the Prime Minister's Office warned, in his discussions with Soviet environmental authorities in Moscow recently, that Norwegian environmental assistance is currently of extreme importance. It is impossible at present to say how big an amount they are talking about, but central sources in the ministries have told AFTENPOSTEN that Norway and Finland, together, probably will have to come up with several hundred million kroner to get the rebuilding in Nikel moving. Parts of the sum may be given as inexpensive loans, and some will be given as direct subsidies. They are working energetically at arranging a joint Finnish-Norwegian drive and are trying to avoid having firms from the two countries begin a long and bitter competition in regard to investments. State Secretary Eide is to meet with Finnish authorities in a week.

Pollution from the Kola Peninsula is now regarded as one of the Scandinavian countries' very worst environmental problems. In addition to large amounts of sulfur smoke, large quantities of heavy metal are transported across the borders. The Norwegian Institute for Water Research has pointed out the pollution by nickel, copper and aluminum in watercourses in the South Varanger township. The fact that the winds in that region move eastward most frequently explains why devastation on the Norwegian side is limited in proportion to the gigantic discharges. After the rebuilding that is planned, discharges of heavy metal will be reduced to almost zero, while discharges of sulfur dioxide will be cut by approximately 90 percent.

The Kola project can be a test case for the Norwegian government in many ways. The Prime Minister's many statements to the effect that environment investments in the future must be carried out in such a way that maximum benefit for the environment is obtained irrespective of national borders will be put into effect. At the same time, such a big effort may have widespread effects

on trade and industry in Finnmark and on other commercial cooperation across the border. As AFTENPOSTEN understands the situation, Norway wants to ask for a suitable plan covering the carrying of the entire rebuilding project to completion and for a certain amount of Norwegian participation, so that Norway will be included in the providing of financial assistance for the Nordic Arctic's decidedly massive environmental effort.

Norway, USSR Discuss Kola Emissions Reduction Options

90WN0224A Oslo AFTENPOSTEN in Norwegian
20 Jul 90 p 3

[Article by Morton Fyhn]

[Text] The Soviet Union yesterday promised to consider using Norwegian technology to reduce industrial emissions on the Kola Peninsula. Soviet interest in Norwegian know-how is great, and contacts with Norwegian companies will be strengthened.

"I am convinced that the Soviet environmental authorities are extremely concerned with respect to doing something about the emissions on Kola," State Secretary Kai Eide told AFTENPOSTEN at the prime minister's office. Yesterday in Moscow, a Norwegian delegation under Eide's leadership held a two-hour discussion with acting Environmental Minister V. Sokolovsky concerning measures to reduce the Kola emissions.

"On the Norwegian side, we placed great emphasis on the reduction of those emissions which are affecting East Finnmark. The Soviets indicated that their experts are presently studying different types of technology which could be used to clean up industry on Kola, and the choice as to which technology will be employed will made as early as September," says Eide.

Finnish competition

Both Soviet and Finnish technology are also in the running with respect to reducing the Kola emissions, and it is apparent that the Finns have wasted no time in presenting their offer. Contracts totalling billions of kroner could be involved.

State Secretary Eide stressed that the most important thing for Norway is that a satisfactory cleanup be achieved, but he also pointed out that Norway has highly suitable technology to offer. The Soviets are aiming for a cooperative effort which includes financial support, a position which Norway has accepted.

Kola is not the only environmental problem facing the Soviet Union. This was made quite clear to the Norwegian delegation. During the discussion, the Soviets indicated that they were interested in hosting a seminar on environmental protection and economic planning in Moscow. Norway and the Soviet Union have agreed to continue their environmental dialogue.

State Secretary Kai Eide has forwarded a letter from Prime Minister Jan P. Syse to Prime Minister Nikolay Ryzhkov in which Syse offers to cooperate on environmental problems.

Today the Norwegian delegation will have discussions with Vice Foreign Minister Petrovskiy and with the Ministry for Foreign Trade. In these talks, Eide will bring up the outstanding claims which Norwegian business has in the Soviet Union. These claims run to almost 100 million kroner.

Copenhagen August Arctic Environment Conference Previewed

90WN0225B Copenhagen BERLINGSKE TIDENDE in Danish 25 Jul 90 p II 9

[Article by J. J. Kjaergaard: "Arctic Researchers Meet in Copenhagen"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] 200 scientists are taking part in Polartech '90, which will take place in Copenhagen in August. Large Soviet delegation.

"We intend to make environmentally sound arctic solutions a Danish specialty," says Director Arne Hasle Nielsen of the ATV Institute Ship Technology Laboratory.

He is the chairman of the committee, which is getting ready for the Polartech '90 conference.

200 researchers and technicians from many nations will meet August 14-16 at Eigtveds Pakhus in Copenhagen to discuss working in the world's coldest and most environmentally sensitive area. The conference is hosted by the Academy of Technical Sciences, the Danish Polar Center and the Company for Arctic Technology.

Experts estimate that at least half of the world's oil reserves and greater quantities of minerals are to be found north of the polar circle.

For example, major gold findings have been made in Greenland.

Thus, the arctic areas are of economic interest, even though the costs involved in exploiting their resources are much higher than in areas with milder climates.

"Denmark has gained a great deal of experience in this area as the result of many years of work in Greenland. We know that we have to take good care of the environment," says Arne Hasle Nielsen. The conference will be opened by Prime Minister Poul Schluter, after which Minister of Education Bertel Haarder will speak on Danish research and development in the area.

Other aspects will be presented by Emil Abelsen of the Greenland Domestic Council, Mary Simon, who is president of the international Inuit organization known as ICC, and by Ostap O. Sharemeta from the Soviet Ministry for the Oil and Gas Industry.

The Soviet Union will send a large delegation, with at least ten participants; a fact which is worthy of note.

The Russian market for arctic technology is very large.

Argentine, Australian Officials Discusses Antarctic Issues

PY0109175890 Buenos Aires BUENOS AIRES HERALD in English 31 Aug 90 p 11

[Text] (DYN)—Australian Deputy Foreign Minister Richard Woolcott met with Argentine Foreign Ministry officials yesterday to discuss bilateral issues such as the Antarctic, disarmament, regional security and commercial air transport.

Woolcott arrived in Buenos Aires on Wednesday [29 August] night and is leaving today. Specific issues included the discussion of a Franco-Australian proposal for an Antarctic environment protection agreement and the upcoming meeting of signatories of the Antarctic treaty to be held in the Chilean capital of Santiago during November and December.

Woolcott met with Foreign Undersecretary Hector Subiza and they signed a bilateral crime prevention agreement between the two countries.

Woolcott leaves at 9:45am today to continue his tour of Argentina, Brazil, Chile, Uruguay and Peru.

Brazil, Indonesia Sign Environmental Protection Accord

PY0109170890 Brasilia Radio Nacional da Amazonia Network in Portuguese 1000 GMT 1 Sep 90

[Text] The Brazilian Government has signed a cooperation agreement on environmental protection with Indonesia. The agreement was signed by Brazilian Agriculture Minister Antonio Cabrera and the Indonesian forestry minister. We have a report from (Iara Selva).

[Begin recording] [Selva] Minister Antonio Cabrera explains the basis of the agreement:

[Cabrera] As the communique says, the objective is to transfer new technology that Brazil has. The important point is that as of now, the two countries have decided to have greater cooperation. Our request to the minister is that Indonesia join us in the battle against subsidies for international market production, because by favoring surplus export production, these subsidies are the main cause of environmental destruction today.

[Selva] Minister Cabrera also said he advocates free agricultural exchange for food production with the objective of preserving food for future generations. [end recording]

Argentine-British Group on Fisheries Affairs To Meet

PY0109174890 Buenos Aires BUENOS AIRES
HERALD in English 31 Aug 90 p 1

[Text] (DYN-NA)—The first meeting of the joint Argentine-British consultancy group for fisheries affairs will be held in Rio de Janeiro on September 4-6, it was announced officially.

The group—which will gather within the framework of the umbrella on sovereignty issues on the Malvinas, South Georgias and South Sandwich Islands—will have the task of exploring bilateral possibilities for cooperation and the conservation of the most prominent fish species in the southwest Atlantic, including the waters around the Malvinas Islands.

The work group was set up by the governments of Argentina and Britain at the joint declaration of Madrid on February 15 of last year.

The Argentine side will be headed by Foreign Affairs Ministry Malvinas, South Atlantic and Antarctic Director-General Jose Maria Otegui, while the British delegation will be led by Foreign Office South Atlantic and Antarctic Affairs Director Sir Merrick Baker-Bates.

The aim of the sessions is to draw up guidelines to protect deepsea fish stocks from large fleets of third countries sailing in the area.

South African Unions' Complaint Against Gillnets, Taiwan Refuted

MB1309173690 Johannesburg SAPA in English
1538 GMT 13 Sep 90

[Text] Cape Town Sept 13 SAPA—The Congress of South African Trade Unions [COSATU] and an affiliate were welcome to meet Environment Minister Mr. Gert Kotze after the labour groupings made statements “teeming with unfounded allegations” on local marine resources.

Mr. Kotze issued a statement on Thursday in response to claims by COSATU and the Food and Allied Workers Union that South Africa was allowing “Taiwanese pirates for plundering” local fishing resources [sentence as received].

According to Mr. Kotze, the statement “is teemed with so many unfounded allegations and simply untrue statements that is clear that their information and insight leave much to be desired”.

Contrary to what the union claimed, the SA [South African] Government and Department of Environment and Water Affairs were not “slack” on the use of gill and driftnets.

Similarly, the union’s “blanket statement that the volumes of fish caught by our local fishermen have dropped dramatically is firstly not true and secondly simplistic”, said Mr. Kotze.

“The implication that retrenchments in fishing companies is a result of deliberate mismanagement of our marine resources in order to favour Taiwanese at the expense of our own people, is ludicrous.”

Regarding gillnets, Mr. Kotze said, “together with a few other countries, SA is at the spearhead of an international attempt to stop this unacceptable and destructive fishing method”.

A total ban had been imposed on the use of gillnets in South African waters and there was no legal provision for permits to be issued for gillnetting, he added.

“As I stated before, no more permits for the possession of these nets or fish caught with it will, as far as I can help it, ever again be issued.”

Mr. Kotze said he stood by his viewpoint that fishing with gillnets was unacceptable and that vessels with gill/driftnets on board, or carrying fish caught with these nets, were not welcome in SA waters.

Regarding fishing quotas, the hake quota had been increased by 3,500 [metric] tons, while the pilchard quota had been substantially increased this year. Some other quotas had been decreased for resource management reasons.

“The fishing industry is well-known for its fluctuating fortunes, as any fisherman knows. Retrenchments of staff by private companies is widespread in SA today for a variety of reasons.”

Pacific Forum Leader Criticizes U.S. Chemical Dumping Plan

BK0709062090 Hong Kong AFP in English 0539 GMT
7 Sep 90

[Text] Suva, Sept 7 (AFP)—The 15-nation South Pacific Forum hit out Friday at U.S. plans to destroy chemical weapons in the Pacific, saying that Washington was playing “cheap politics” with the lives of Pacific islanders. Describing the United States as a “trouble-maker,” forum Secretary-General Henry Naisali said, “Our problems here are equivalent to that of Kuwait.”

Alluding to the thousands of U.S. troops sent to defend Saudi Arabia from possible attack after the Iraqi invasion of Kuwait last month, Mr. Naisali said, “The problems in the Middle East concern life... And what's going on in Johnston Atoll also involves lives of people.”

“The Americans are playing cheap politics with the people of the South Pacific,” he said.

Heads of government of forum countries meeting in Vanuatu in early August expressed grave concern about plans to import chemical weapons from U.S. Army bases

in West Germany and incinerate them on Johnston Atoll, 1,600 kilometres (1,000 miles) southwest of Hawaii.

"Are lives in the Middle East more important than lives in the Pacific?" Mr. Naisali asked at a news conference here.

"Forum leaders felt very strongly that the facility at Johnston should not become the permanent toxic waste disposal centre of the world," he said.

Mr. Naisali said the most serious aspect about the Johnston programme was that U.S. officials who attended the forum gave conflicting reports on the safety of the incineration plant.

"There is absolutely no guarantee given by the U.S. that it's safe," he said. "What they're saying is that to the best of knowledge, it is safe."

Mr. Naisali said that the forum would send a four-man ministerial team from Kiribati, Vanuatu, Western Samoa and the Federated States of Micronesia to Washington this month.

The ministers hoped to meet U.S. Defence Secretary Dick Cheney or Secretary of State James Baker during their visit, from September 17-19, he said.

In meetings with U.S. congressmen and officials of the Department of State and the Environment Protection Agency, they will press for a commitment by Washington to "close down the facility once current operations have been completed."

Mr. Naisali said that the United States was "taking advantage of our smallness and knowing that we don't lobby and don't complain." He said the forum did not "want the Pacific to be a dumping ground."

He recalled that the forum had for years urged the French to stop their nuclear testing "and they've said don't worry, it would take hundreds of years before any leaks. But last week an American scientist, based on data from a French intellectual, said leaks could be seen in six years," he said.

Last week, the British journal **NEW SCIENTIST** reported findings by Norm Buske, a U.S. scientist, that water samples taken at Mururoa Atoll, a nuclear test site in French Polynesia, showed radioactive cesium 134 and cesium 137 were leaking into the ocean far more quickly than previously thought.

The "same sort of thing could happen at Johnston Atoll," Mr. Naisali said. "The point is that it means life. We're also human beings."

"Why can't they destroy it in Germany and America?" he asked, adding, "it's because of political lobbying in Europe."

As for Washington's announcement it was building eight new incineration sites in the continental United States, Mr. Naisali said, "I'll believe it if I see it."

Greenpeace Reports Alleged Accidents at French Nuclear Test Site

BK0309103090 Hong Kong AFP in English 0822 GMT 3 Sep 90

[By Michael Field; Embargoed until 1200 GMT on 3 September]

[Text] Wellington, Sept 3 (AFP)—The environmental movement Greenpeace will Tuesday publish what it describes as eyewitness accounts of accidents at France's South Pacific nuclear test site at Mururoa Atoll, including one which killed four men. France has always denied any significant accidents at Mururoa, 1,300 kilometres (806 miles) southeast of Tahiti.

A French Embassy official said nuclear tests were "constantly scientifically monitored and the observations reported to international bodies." In addition over 300 people had visited the atoll, he said.

"All possible precautions" were taken for safety and it was a "constant concern."

Referring to the claimed 1979 accident he said "radioactivity was not involved in this unfortunate accident." He provided a transcript of a comment made at a Papeete press conference shortly after the accident by the high commissioner for atomic energy, a Mr. Teillac.

He described the event as a "laboratory accident" involving a cleaning fluid containing acetone. He said an explosion was caused when fumes ignited and of four people injured, two died.

Greenpeace's book to be published here, "Testimonies," was the result of interviews with former test workers and inhabitants of nearby islands. France has conducted 44 atmospheric tests and more than 120 underground tests at Mururoa.

Interviews were conducted in 1987-88 by a Swiss doctor and crew member of the Greenpeace ship **Rainbow Warrior**, Dr. Andy Biedermann, now resident in Geneva.

The book claims it is the first time many of the people quoted have spoken about their experiences and because they fear repercussions their names have been changed.

"Many of the people interviewed...believe that the tests have seriously affected their health and that of their children and friends. They talk about mysterious illnesses, unexplained deaths, stillbirths and a large increase in the number of handicapped children born after the tests began."

An office worker, "Tama", said: "I left my job at Mururoa even though I earned as much as a member of the Territorial Assembly and got free flights home every

weekend because of a terrible accident I saw." He said this was related to the scheduled July 7, 1979 test of France's first neutron bomb.

On July 6, he said, an explosion occurred near the control room, near where the device itself was. "My colleague was flung out of the control room just in front of me—dead instantly." His French boss, Rene Villette, was killed inside the bunker and two others died of their injuries later. Plutonium and other radioactive substances were scattered and cement was poured over the bomb container, he claimed.

"Rene Villette's remains—or what were thought to be his remains—were found three days later and sent to France in the form of a concrete block."

Tama said he received compensation of 1.2 million Pacific francs (9,600 U.S. dollars.) "I was warned not to talk to anyone about what had happened. There were no threats from the security people but other Frenchmen told me I should watch my step... They said there could easily be an accident."

He claimed with underground testing the atoll had begun to sink. A road on the atoll has to be raised every three months and is now two metres (seven feet) above the original ground level.

He said a 1977 underground test, codenamed Astyanax, produced an earthquake that no one could stand upright in and a three kilometre (1.8 mile) long fissure opened up. As a result of further tests it has now extended to seven kilometres (4.3 miles), he claimed.

A welder, "Manutahi" said volunteer workers got extra money and shorter hours for working in "contaminated zones."

"A special list was made of those who did volunteer to work there so that they would be looked after if, in the future, they should become unemployed. The main problem was inhaling the radioactive particles." He claims he was contaminated when working on a drill for an underground test when he was splashed by water left in an old hole. "I know of quite a number of people who have got sick working at Mururoa and Fangataufa but I don't know what was wrong with them."

PRC City Seeks Joint Environmental Projects With Hong Kong

HK0409031990 Hong Kong HONGKONG STANDARD in English 1 Sep 90 p 10

[Text] Authorities in Guangzhou are seeking joint projects to fight pollution with research and academic institutes in Hong Kong.

Gan Haizhang, Deputy Director of the Guangzhou Municipal Bureau of Environmental Protection, said that the city authorities were planning to widen exchanges and cooperation with Hong Kong and launch joint projects against pollution.

Mr. Gan, on a one-week visit to the territory, is attending the international conference entitled "China and Hong

Kong at a Crossroads—Prospects for the 21st Century," organized by the Hong Kong Baptist College.

Mr. Gan is here with his colleague, Wu Zhengqi, chief engineer of the Guangzhou Environmental Monitoring Centre.

Mr. Gan said one of his missions in Hong Kong was to open liaison work with academic institutes and to seek joint research projects on environmental protection.

"Our visit to Hong Kong will serve as the starting point for an expansion of cooperation between Guangzhou and Hong Kong in studies on environmental protection," he said.

Mr. Gan said the Guangzhou Research Institute of Environmental Protection and the Guangzhou Environmental Monitoring Centre had cooperated with the Hong Kong Baptist College and the Hong Kong City Polytechnic in a project in May.

"During my visit, I'll meet environmental protection specialists from the University of Hong Kong, Hong Kong Polytechnic and Hong Kong City Polytechnic to discuss cooperation possibilities," he said.

Mr. Gan said he and Mr. Wu would also hold discussions with officials of the Environmental Protection Department to exchange views on the protection of water resources in the territory and in Guangzhou.

"Guangzhou usually faces the problem of water pollution around November and December every year when the dry season comes. That's why we hope to exchange experience with the Hong Kong authorities on methods to fight water pollution," he said.

"We hope the rich financial resources and information in Hong Kong will benefit our environmental protection research projects."

Mr. Gan said the Hong Kong Government had made reference to the environmental protection policies and measures on the mainland, in formulating its programmes in Hong Kong.

"The Guangzhou municipal government launched environmental protection programmes in 1972 and we have accumulated abundant experience in legislation and policy-making," he said.

"We have imposed strict controls on enterprises and factories.

"We have formulated sufficient laws and regulations to ensure environmental protection in the course of our opening to the West over the past years," he said.

"The Hong Kong authorities can learn from our experience... among enterprises through the formulation of strict regulations and imposition of heavy fines," he said.

Mr. Gan said his bureau had organized an exchange programme with the Hong Kong Government and the Shanghai and Beijing municipal authorities in 1986 to discuss their experience in operating meteorological monitoring stations.

SOUTH AFRICA

Sasol Employees Exposed to Radioactivity 'Not Improved'

MB0309161890 Johannesburg Domestic Service in Afrikaans 1400 GMT 3 Sep 90

[Text] The condition of the two employees from the SASOL [South African Coal, Oil, and Gas Corporation] plant at Sasolburg who suffered from radiation following exposure to radioactivity, has not improved.

A SASOL spokesman, Mr. Jan Krynauw, says there are signs of radiation on their hands. Another 22 employees who were admitted for observation showed no signs of radiation but would again be examined fully after 60 days.

The employees were exposed to radioactivity when an outside contractor left an isotope lying around the area of the plant.

Transvaal River Water Like 'Battery Acid'

MB0609161090 Johannesburg THE STAR in English 6 Sep 90 p 2

[Report by Therese Anders, Highveld Bureau: "Water in Transvaal River Like 'Battery Acid'"]

[Text] The water in South Africa's most polluted river, the Brugspruit at Ferrobank, west of Witbank, is so acidic that it will destroy clothes.

So says Department of Water Affairs deputy director water quality Dewald Steyn, who announced that tests on the water had recorded a critical pH level of 2, which is approaching that of battery acid.

The foul-smelling river meanders through one of the fastest-growing squatter settlements in the Transvaal.

Yet despite the corrosiveness of the water, THE STAR yesterday found women doing their washing in holes dug only metres from the river.

They said they believed the "poisons" in the river were filtered out this way.

According to Mr. Steyn, the Brugspruit is causing the department a major headache because it is flowing into the Loskop Dam and the Olifants River system.

He said the high levels of acid were caused by seepage from the old abandoned Transvaal and Delegoa Bay colliery nearby.

"We've tried to evaporate the water from that river by pumping it into large pans, but that's not working. It's not out of control yet, but we're having to watch the situation very carefully."

The abandoned mines were not the only problem in the Witbank area.

According to the director of the Institute of Ground Water Studies at the University of the Orange Free State, Professor Frank Hodgson, the new mines, where acid water was created when it filtered through piles of stored coal, were responsible for the country's biggest ground-water pollution problem.

Poll Shows Government Needs Better Environmental Policy

MB0609161290 Johannesburg THE STAR in English 6 Sep 90 p 5

[Report by Staff Reporter: "Survey points to more protection"]

[Text] White South Africans believe the State should do more about protecting energy sources, fish and shellfish reserves, lagoons, estuaries, lakes and dams.

This is according to the results of a survey by Market and Opinion Surveys (M and M) for the Marketing Research Standards authority of South Africa.

Members of the consumer panel consulted for the survey were asked which environmental issues were important and which organisations should cease damaging practices and invest more time and money in the protection of the environment.

The survey also revealed that mass media and schools were expected to educate the public on environmental protection.

The primary responsibilities of the private sector in conserving the environment were:

- To do more about water and air pollution, recycling waste and reducing the reliance on the use of chemicals in the treatment of disease.
- To introduce methods of reducing pollution—even if they cost more.

The sample of 1,300 respondents said the general public could protect the environment by:

- Stopping soil and river pollution
- Reducing the use of toxins in plague and pest control.

1989 Environmental Statistical Data Published
90WN0207C Beijing ZHONGGUO HUANJING BAO /CHINA ENVIRONMENTAL NEWS/ in Chinese
2 Jun 90 p 1

[Article: "1989 Environmental Statistical Bulletin of the State Bureau of Environmental Protection"]

[Text]

I. Status of Three-Wastes Discharge, Treatment and Utilization

(A) Sewage

1. Total quantity of sewage discharged—35.3 billion tons
2. Discharge of industrial sewage—25.2 billion tons
Of the total, those treated—7.5 billion tons
Treatment rate—29.8 percent
Sewage meeting discharge standard—12 billion tons
Up-to-standard rate—47.7 percent
Treated waste at standard—4.3 billion tons
Treatment rate up-to-standard—57.9 percent

(B) Stack gases

1. Stack gases in fuel combustion
Amount discharged—5,761.3 billion standard cubic meters
Of this total, discharge with fumes and dust removed—4,037.8 billion standard cubic meters
2. Stack gases in production process
Amount discharged—2,545.2 billion standard cubic meters
Of this total, discharge with purified treatment—1,458.3 billion standard cubic meters
In stack gases, sulfur dioxide—15.64 million tons; fumes and dust—13.98 million tons

(C) Industrial solid waste

1. Quantity of industrial solid waste—571.73 million tons
Of this total, with treatment and disposal—364.37 million tons
Treated disposal rate—63.7 percent
Solid waste with full utilization—161.37 million tons
Full utilization rate—28.2 percent

2. Discharge of industrial waste—52.65 million tons

Of this total, solid waste discharged into rivers, lakes and seas—12.64 million tons

3. Area occupied by industrial solid waste—554.04 million square meters

Of this total, arable lands occupied—35.74 million square meters

4. Number of enterprises closed and moved due to pollution—895

II. Pollution Treatment Capital and Utilization Effect of Enterprise Units

(A) Use of capital in pollution treatment

Total—4.35 billion yuan

Of this total, treated sewage—1.97 billion yuan; treated stack gases—1.58 billion; treated solid waste—400 million yuan; noise abatement—130 million yuan

(B) Utilization effects

1. Scheduled treatment items in the year—31,871
2. Completed items in the year—27,900
Of this total, scheduled items in the year—23,757
Completion rate of scheduled items in the year—74.5 percent

III. Economic Benefits of Three-Wastes Full Utilization

(A) Product output value of three-wastes full utilization—5.8 billion yuan

(B) Profit of three-wastes full utilization—1.9 billion yuan

IV. Use of Sewerage Discharge Fee and Status of Reimbursements and Penalties for Sewerage and Pollutants

(A) Use of sewerage discharge fee

1. Units paying sewerage discharge fee—182,000
2. Sewerage discharge fee used to treat pollution source—840 million yuan
3. Sewerage discharge fee used for regional overall prevention and treatment—80 million yuan

(B) Pollution reimbursements and penalties

1. Total reimbursements for pollution—90.69 million yuan
2. Total penalties for pollution—26.06 million yuan
3. Pollution incidents—3,332

V. Status of Letters and Visits by the Public

(A) Number of letters from the public—52,786

Of this total, letters on atmospheric pollution—18,047

Of this total, letters on water pollution—10,502

Of this total, letters on noise pollution—14,726
(B) Number of public visits—78,122

Of this total, number of public visits for atmospheric pollution—27,026
 number of public visits for water pollution—22,771
 number of public visits for noise pollution—15,859

VI. Construction Status of Local Environmental Protection Systems

(A) Total number of personnel—60,343

Of this total, scientific, technical and administrative personnel—37,839

percentage of all personnel—62.7 percent

(B) Number of various training classes operated—2,468

training on-job cadres—103,582 man-occasions

Remarks: 1. Statistics on three-wastes discharge included about 80,000 enterprises at county level and above; 2. Pollution treatment statistics included 30,000 enterprises at county level and above.

29 May 1990

Li Peng, UN Deputy Secretary-General Discuss Environment

*OW1009100590 Beijing XINHUA in English
0948 GMT 10 Sep 90*

[Text] Beijing, September 10 (XINHUA)—Chinese Premier Li Peng has asked local governments and enterprises to pay more attention to environmental protection and take stricter measures to solve pollution problems.

He made his comments at a meeting here today with Deputy Secretary-General of the United Nations and Executive Director of the UN Environment Program, Dr. M. Tolba.

According to Chinese officials who attended the meeting, Tolba praised China for its achievements in environmental protection and said its experience can be applied to other Third World countries.

Tolba said he hoped that China will make more contributions to world environmental protection.

Premier Li said he hoped Tolba will continue to offer suggestions for China's environmental protection and promote Sino-foreign cooperation in the field.

Tolba is in China at the invitation of the State Bureau of Environmental Protection to attend the fourth world conference of Lake Environmental Management and Protection to be held in Hangzhou.

Ecology Stressed at Guizhou Forestry Conference

HK0609055590 Guiyang Guizhou Provincial Service in Mandarin 2200 GMT 1 Sep 90

[Excerpt] A four-day provincial forestry conference, convened by the provincial party committee and government, closed on 1 September.

The meeting reviewed achievements, exchanged experience, and set certain tasks, thus increasing the sense of responsibility and urgency of afforesting Guizhou Province.

Provincial party and government leaders Liu Zhengwei, Su Gang, Zhang Yuhuan, Zhang Shukui, Li Tinggui, Luo Shangcui, Qiao Xueheng and (He Rendong) attended the closing ceremony.

Governor Wang Chaowen, also deputy secretary of the provincial party committee, made a closing speech. He pointed out: In recent years the whole province has attached importance to the sense of agricultural development, but ecological problems—a serious reality—and their possible consequences are far from being seriously thought about by leaders at different levels. For this reason, from now on, we should launch an ideological mobilization as we have done in promoting family planning and elevating the tempo of agriculture, so that a new situation will be created in which the whole party attaches importance to the work of forestry, all the people get into it, and the entire society plunges into it. Wang Chaowen also said the key to future afforestation lies in whether we can follow in the right track. We should combine large-scale afforestation programs with dispersed afforestation, combine engineering afforestation and protection of the trees in river basins with general afforestation movements, and combine work on key points with work on lines and in other areas. The province should put emphasis on some large rivers and major river basins and some main lines of communications. [passage omitted]

Impact of Shanghai Development on Environmental Protection

*90WN0207A Beijing ZHONGGUO HUANJING BAO /CHINA ENVIRONMENTAL NEWS/ in Chinese
29 May 90 p 1*

[Article by Zhao Guanliang [6392 7070 5328]: "The Environmental Protection Work of Developing Pudong in Shanghai Brings New Opportunities and New Demands"]

[Text] At an interview with this reporter days ago, Director Lu Fukuan [7120 4395 5328] of the Shanghai Environmental Protection Bureau said, "Opening up Pudong brings new opportunities and new demands for Shanghai's environmental protection workers."

After Premier Li Peng [2621 7720] announced an important policy decision on opening Pudong up to the domestic and international press, general attention was

stirred among the world press circles. The environmental protection problems of Pudong also became the focal point of attention. In Lu Fukuan's view, Shanghai's old town has limited infrastructural facilities with a high population density and difficult migratory and rehabilitation conditions. The present project of constructing a new city in Pudong will provide convenience by relieving congestion and rehabilitating the old town. On the other hand, the responsibility of environmental construction is high in order to build Pudong into a new modernized city opening to the world. Environmental protection of the old and new city should be considered in an overall view when deciding on the general layout.

It was reported that a Pudong Development Work Team was established with the Shanghai Municipal Bureau of Environmental Protection; this activity has been under development. At present, the general layout of environmental protection for Pudong has been under development with a rapid pace. The various comprehensive regional divisions and the environmental protection targets of the agricultural ecology area as well as the detailed planning will be devised in an orderly pace at different levels. According to the target, in addition, policies on the atmosphere and sewage control are being drafted.

Groundwater will be exploited within the new Pudong area. In addition, the supply of water in several quality grades, concentrated heating and heat supply to entire districts will be provided in some areas, thus achieving the purposes of energy resource economizing and protecting the public health. In addition, trades and industries with an absence (or with low) pollution will be encouraged in their development in the Pudong development zone. For industries with particular pollution levels, their development should be postponed until pollution control targets are reached. Trades and industries causing severe pollution or control difficulties should be firmly forbidden from development. The 2,800 factories now in Pudong should be industrially renovated in order to satisfy the corresponding requirements of environmental protection within specified time limits in the operational area. Eight systems should be strictly executed in approving and managing the construction projects.

According to bureau director Lu Fukuan, there are still many difficulties in environmental protection in the Pudong development. In the near future, the municipal bureau of environmental protection will convene an Environmental Protection Symposium on the Pudong Development; at the symposium, experts will be invited for their views on environmental protection planning and the Pudong development policy. Thus, activities will be scientifically grounded from their inception within the large overall developmental system.

Environmental Impact of Jungar Coal Field Development Studied

90WN0207B Beijing ZHONGGUO HUANJING BAO /CHINA ENVIRONMENTAL NEWS/ in Chinese
2 Jun 90 p 3

[Article by Zan Chenggong [2501 2052 0501]: "Impact of Developing the Jungar Coal Field on Ecology and Environment"]

[Text] Well known to the world press, the Jungar Coal Field is China's largest construction project in the coal industry since the founding of the people's republic; the first stage project has begun. With a total investment amounting to 4.1 billion yuan, the project is being handled by a comprehensive consortium responsible for simultaneous construction of coal, power and road facilities. Among stage I projects designed and constructed entirely in China, there are the 12-million-ton-annual-output Heidaigou large modern strip coal mine and coal dressing plant, a 200,000-kW pit-mouth power plant, and a 215-km single track electrified railroad, as well as major coordinated projects: water supply, an industrial park and earthworks. This year, the project began construction on an overall scale; completion must be reached by the end of 1992. In 1993, coal will begin to be shipped out.

In areas of loess plateau with very severe water erosion of soil, these conditions will extensively affect the regional ecology and environment in the construction of China's largest coal mine project.

The attempt is to predict the prevention of artificial damage with possible effects on regional ecology and environment during construction of the Jungar project in order to attract the attention of various groups.

The most immediate effects of strip-mine development is the disturbance of solum. Stripping and turning over of large quantities of rock and solum will result in large quantities of mixed solum from the mixture of sandstone, shale, moya and loess, which easily weather into clastic rocks. These clastic rocks can be a source of the main constituents of coarse grain silt in the Yellow River and can provide abundant material base for desertification. Earth excavation and filling are due to simultaneous operations of large numbers of gigantic machines in building the railroad, the highway, the industrial park, the coal dressing plant, the steam power plant and earthworks in the mining area, with busy traffic of numerous large vehicles on residential and communal-service facilities in the residential area in a large number of civil construction projects. These large-scale artificial activities will heavily impact on the natural ecology system in the area: severe erosion and sand generation will exist in the rainy period; and large amounts of loose soil will be eroded during the windy period.

During the period of capital construction, engineering construction is on a large scale within an area of 17.12 square kilometers. Resulting from construction, a total

of 73.41 million cubic meters of soil and rock overburden will cause some damage to plant cover in the affected area of 200 square kilometers, with large quantities of loose exposed soil and rock. At present, the area is undergoing intensive desertification with extensive distribution of desert land and intensive wind and sand action. Exploitation of the mining area will cause rapid expansion and more intensive desertification with more numerous sandstorms, high winds and sand streams, thus eroding ground surface structures, worsening working conditions, and affecting the regular operation of machinery.

Wind and water erosion are dynamic processes. In addition to direct effects suffered by the mining area, the Yellow River is directly impacted. As reported by KEJI RIBAO [SCIENCE AND TECHNOLOGY DAILY], for four decades since the Liberation the state has invested large sums of capital, without causing damage to the lower reaches of the Yellow River; the cost of no damage is prevention. Safety in the lower reaches of the Yellow River is determined by its sand-carrying ability during the rainy flooding period in the Yellow River's middle stream area with abundant sand, especially coarse sand. After the coal field was mined in the stage-I project, the average (over many years) sand load entering the Yellow River has been 3 to 11 million tons. Since this area is the source of the Yellow River's coarse sand, with relatively coarse constituents of silt and sand grains, loess is in the upper stratum since more than 74 percent of all sand is silt and sand with less than 0.025 mm grains. After mining, there is now approximately more than 80 percent of silt and sand with less than 0.025 mm grains in post-mining mixed soil. So there are approximately 2.4 to 8.8 million tons of yellow silt and sand entering the Yellow River, thus leading to heavier silting in the main river channel. With allowance for adjustments along the river's course, the silting load is approximately 1.4 to 5.1 million tons in the main channel of the lower reaches; this silt load accounts for 2 to 4 percent silting in the main river channel as the average of many years before mining. From the calamities caused by high-sand-content floods in the lower reaches of the Yellow River, which led to abnormal phenomena in local stretches of the river due to more sand in the mining area, difficulties will exist in flood prevention. The economic loss due to damage is difficult to quantify.

In addition, due to damage caused by higher sand content in flooding during the rainy flooding period, there is a certain threat to facilities in the mining area, such as railroads, highways, and water supply pipelines. Once damage is caused to these engineering facilities, the results will gravely affect production in the mining area, causing relatively major economic losses.

Through numerous multidisciplinary evaluations of the environmental impact, the main environmental problem to be faced in future engineering development is the sparse plant cover of the area with severe water and soil erosion as well as rapid desertification. In the evaluation area, the plant cover is 25 percent in extent; the water

and soil erosion modulus is 13,000 tons per square kilometer per year; and the annual rate of spreading desertification is 4 percent. In the area, water resources are low with a dry climate, many windy days with gales, abundant sand resources, sparse precipitation, and heavy rainstorms. The unique natural geographical conditions are very favorable to water and soil erosion as well as desertification, thus very easily leading to water and soil erosion as well as desertification. It is apparent that construction of the Jungar project is causing severe damage to ground-surface ecology. Especially in the strip mining zone, earthwork area and industrial park, there are large areas of stripped ground with large amounts of soil moved; water and soil erosion as well as wind erosion will be increased by several fold after construction begins. In some areas, destructive damage will be inflicted on the plant cover.

Hence when the project of the Jungar Coal Field is underway, the ecological and environmental protection work in the area should be done carefully with measures to protect the environment against damage: landscaping, covering with soil, replanting, engineering and biological measures, water and soil management as well as dust removal. These measures can greatly lessen the geomorphic and ecological environment impact after stripping.

Key Environmental Project Passes Appraisal

*90WN0207D Beijing ZHONGGUO HUANJING BAO /CHINA ENVIRONMENTAL NEWS/ in Chinese
14 Jun 90 p 1*

[Article by Jiang Xiaoyu [5592 1420 3768] of ZHONGGUO HUANJING BAO: "As a Key Environmental Protection Project in Science and Technology in the State's Seventh 5-Year Plan, Fumes Desulfurization Technique With Direct Injection of Absorbent Into Boiler Passed Technical Appraisal"]

[Text] Jointly developed by the Harbin Power Station Complete-Equipment-Set Design and Research Institute, as well as the Beijing Light Industry College, the fumes desulfurization technique with direct injection of absorbent into boiler as a key project of scientific and technical research passed appraisal and was accepted by experts on 31 May at a meeting sponsored by the State Bureau of Environmental Protection.

At present, generally there are desulfurization measures for steam coal used in China's power station boilers and industrial boilers; thus, the discharge of carbon dioxide in large quantities entails severe pollution effects. In the Number 58 key environmental protection project (in the state's Seventh 5-Year Plan)—"Study on Prevention and Treatment Technique of Atmospheric Pollution"—Research on the Desulfurization Technique in the Stack Fumes of Steam Power Plants is listed as a special subproject. After undergoing development for more than 4 years with difficult and detailed efforts, in a study of the technique a desulfurization rate over 70 percent was achieved in small scale low-sulfur coal powder combustion. If investment and technical reform are applied to

China's 80-percent low-sulfur-coal (sulfur content of 2 percent and less) boiler-generator sets in China's coal-combustion steam power plants with a capacity of approximately 50 million kW, 4.5 million tons of sulfur dioxide discharges can be reduced, equivalent to one-fourth of China's present sulfur dioxide discharges.

In the opinion of the appraisal committee, this technique fills a technical void in this research field in China, by

achieving the mid-eighties international level with limited primary investment, small floor space, low operating cost and simple operation. As proposed by the appraisal committee, the state should actively support work on improving this technique during the Eighth 5-Year Plan to reach, as rapidly as possible, the intermediate experimental stage for the earliest possible applications.

AUSTRALIA

Debate Surfaces Over Three-Mine Uranium Policy

BK1009095090 Hong Kong AFP in English 0912 GMT 10 Sep 90

[Text] Sydney, Sept 10 (AFP)—Debate has surfaced within the ruling Australian Labor Party (ALP) about the wisdom of its anti-uranium stance, following a sudden shift in the world's energy balance as a result of the Gulf crisis.

ALP officials Monday rebuked comments by National Secretary Bob Hogg that the party would change its policy, which limits the number of uranium mines in Australia to three specific sites.

Jeannette McHugh, of the ALP uranium review committee, said on radio Monday there was no public pressure to change the policy.

Mr. Hogg said Sunday that Canberra's three-mine policy was contradictory and needed revising following the Gulf crisis.

"There will be a lot of rethinking about the whole question of energy worldwide," he said. "Whether nuclear power has a role to play is obviously a judgment based on safety and disposal."

"Our attitude to energy, and nuclear energy in particular, has to be thought through very thoroughly," he said.

But Ms. McHugh said the public opposed a change of policy.

"The absolutely overwhelming view of the public and the party is against increased uranium mining and export," she said, adding that it was hard to find anyone apart from the mining companies who supports increased uranium mining.

"Those people in the Labor Party who are undergoing such enormous shock at the moment at the changes happening to our party simply will not accept that," Ms. McHugh said.

The government announced last week that it would sell 49 percent of its Commonwealth Bank and has agreed in principle to partially float government-run Qantas and Australian Airlines despite the party's anti-privatisation policy.

The ALP made its anti-uranium stance party policy in 1977 but softened the doctrine in 1983 to allow mining at three named sites.

At the 1988 national party conference, delegates set up a committee to review the policy. The committee has not yet made its report.

Bob Crew, resident manager of the Olympic Dam Mine, said its owner Western Mining Corp. questioned the soundness of the "three mines" policy.

"Normal business should prevail. What's the difference between two mines or four mines? There are adequate environmental safeguards for uranium mining," Mr. Crew said.

Jean McSorley, a spokeswoman for Greenpeace Australia, predicted a huge public backlash if the government allowed more uranium mines, which she claimed were neither safe nor economical.

"If would be very foolish to lose the green vote," she said.

"The back end costs are going to catch up to this industry. The back end costs are human lives," she added.

Only the ranger and the non-operational Nabarlek Mines in the Northern Territory and Olympic Dam Mine in South Australia are allowed to export uranium.

Uranium has been discovered but mining blocked at Koongarra and Jabiluka in the Northern Territory and Yeelirrie in Western Australia, as well as numerous other sites.

Australia, with about 30 percent of the world's uranium reserves, produces 10 percent of the world's consumption.

Export sales in 1989-90 reaped 280 million Australian dollars (229 million U.S.).

JAPAN

Restrictions on Tributyltin Production, Import

OW0609140490 Tokyo KYODO in English 0642 GMT 6 Sep 90

[Text] Tokyo, Sept. 6 KYODO—The government will impose curbs on the production and import of tributyltin (TBT) compounds—organic compounds of tin used mainly as antimicrobial agents in paints for ship bottoms—from September 12, officials of the Ministry of International Trade and Industry (MITI) said Thursday.

A revision will be made to an ordinance concerning restrictions on the production of chemicals after approval at a cabinet meeting Friday, the officials said.

As a result, 13 TBT compounds will be subject to the restrictions stipulated in the ordinance, they said.

Under the new rule, companies that either manufacture or import the chemicals will be required to report their production or import plans in advance to MITI.

Companies that import paints containing the TBT compounds will have to report in advance the amount of the imports and other information to MITI, and distributors will have to state on containers that products contain the compounds.

As reported earlier, the 13 TBT compounds produced domestically and imported in fiscal 1989 ended last March 31 totaled about 5,090 tons, up from 4,230 tons the previous year, according to MITI.

VIETNAM

UNICEF-Funded Safe Water Program in Progress

*BK1009085390 Hanoi VNA in English 0707 GMT
10 Sep 90*

[Text] Hanoi VNA Sept. 10—Hai Hung province, north-east of Hanoi, has so far sunk and built 120 pump-wells

under the rural safe water supply programme funded by the United Nations Children's Fund (UNICEF).

Cuu Cao is the first village in Hai Hung's Chau Giang district to have benefited from this programme. It has drilled 19 such wells and will sink 16 more wells in the next four months of this year. All those wells are at least 50 metres deep and concentrated mostly in creches, kindergartens, schools, medical stations, and certain residential areas hard hit by water scarcity.

INTRABLOC AFFAIRS

Central-East Europe Environmental Center Opened in Hungary

LD0609171790 Budapest MTI in English 1602 GMT 6 Sep 90

[Text] Budapest, September 6 (MTI)—The Central-East European environmental centre was officially opened in Budapest on Thursday. The idea of opening the centre was suggested by U.S. President George Bush during his visit to Hungary last year.

The range of the centre's activity extends to data collection and supply, advisory service to organizations and private individuals, environmental education, and contributions towards the solution of ecological problems.

As for funding the centre, Hungary, the United States and the European Community were responsible for the original outlay, but now Austria, the Netherlands, Bulgaria, Canada, Czechoslovakia, France, Yugoslavia, Poland, Norway and Romania, are lending their financial support too.

Peter Hardy, Hungarian leader of the regional centre, told representatives of the countries who have joined the foundation that the centre is opening at a time when the Central and Eastern European countries have freely elected democratic governments, a good chance to restructure their economies, and give prominence to environmental protection.

He added that the centre plans to mediate the transfer of Western experience and financial resources to Eastern organizations, movements and governments.

Sandor K. Keresztes, minister of environmental protection and regional development, welcomed those present. Speaking on behalf of the EC environmental bureau, Giorgio Ruffolo stressed that the regional centre was expected to promote cooperation in environmental protection.

William Reilly, head of the U.S. Environmental Office, conveyed the good wishes of President Bush.

Arpad Goncz, president of the republic, opened the centre by planting a tree.

The event was attended by Prime Minister Jozsef Antall.

Bulgaria Cites Further Chlorine Pollution of Air in Ruse From Romania

AU0609191190 Sofia BT4 in English 1742 GMT 6 Sep 90

[“Another ‘Chemical Attack’ on Ruse”—BTA headline]

[Text] Sofia, September 6 (BTA)—The content of chlorine in the air over the city of Ruse exceeded the permissible levels yesterday and today.

The highest concentration of chlorine ions in the atmosphere of the city was measured as 1.7 over the threshold of safety. Ruse is constantly “gassed” by the chemical works in Giurgiu, Romania, across the Danube.

Romanian Official on Ecological Dispute With Bulgaria

AU0609195690 Bucharest ROMPRES in English 1837 GMT 6 Sep 90

[Text] Bucharest ROMPRES, 6/9/1990—Ambassador Traian Chebeleu, spokesman of the Romanian Ministry of Foreign Affairs, expressed puzzlement as regards the way the Bulgarian party had reacted, through mass media included, to the ecological situation in the Ruse-Giurgiu area. Here is what the Romanian ambassador told the news conference on Thursday morning, September 6:

For having the public opinion informed, I want to remind you that, in conformity with the protocol concluded on July 4, 1990, in Bucharest, two joint commissions were set up by the two premiers, i.e. a commission of government experts, whose task is to analyse the technical and technological condition of the chemical equipment in Giurgiu and Ruse industrial areas and a commission for the Bulgarian nuclear-electric power station at Kozloduy and Belene.

The chemical industry commission checked up 12 industrial units in Giurgiu and 43 ones in Ruse, over July 16-August 15. The conclusions of its activity are drawn in a protocol signed on August 15, 1990, containing divergent points of view referring to the capacity of pollution of the sources traced in the two towns. Thus, the Bulgarian party asked the production of certain goods to stop and the investments for the equipment under construction be desisted. A revamping of Giurgiu chemical plant was also demanded.

The Romanian party pointed out several times that the equipment on Giurgiu chemical platform did not operate starting July 5, 1990, being stopped for overhauling, modernization and technology improvement.

Measurements made by Romanian experts in Ruse established there were 28 polluting industrial units there. The Romanian experts asked for five highly polluting units to change their site or to utterly modernize their technologies. It was also noted that a number of polluting units stood in the residential area of the town. The effects of that pollution are worsened by the geographical position and the climate of the town of Ruse.

All this was discussed both during the analysis made by the joint commission and at the August 30 meeting between Valentin Ionita, state secretary, Department for Chemical and Petrochemical Industry, and Svetoslav Genchev, deputy minister of industry and technologies. No understanding or common point of view was reached. It was established that on September 5, 1990, the two parties should put forth their separate points of

view concerning an international expertise. The Bulgarian party did not come to the meeting that was to take place at Ruse.

The Romanian party has taken so far even more measures on the chemical plant at Giurgiu than those stipulated in the two premiers' protocol signed on July 4, 1990.

Under the circumstances, when experts of both parties have talks for finding a solution to pollution issues in the border area, the unilateral propaganda made through mass media and even the diplomatic steps taken by the Bulgarian party look like trying to distract attention from the real sources of pollution at Ruse, from the responsibilities incumbent on the managerial boards of the polluting enterprises there and on local or central authorities for taking the necessary measures to put an end to pollution.

The Bulgarian party's procrastinating the solving of the problems related to the Kozloduy nuclear-electric power station is also cause of concern.

As the situation of radioactive pollution at Kozloduy is quite intricate, the Romanian party asks the Bulgarian party to have an international expertise concerning the impact of this unit on the environment.

As for the Romanian party, it will make all efforts to find solutions that have in view the interests of both parties, starting from the exact situation of the pollution sources in the border area.

We hope that the issues mentioned above will be approached, all of them, with full responsibility, for seeking out real solutions, giving up propaganda before the experts' having their say.

Bulgarian Ecologists Protest Romanian Pollution Declaration

AU1309191100 Sofia BTA in English 1731 GMT
7 Sep 90

[Text] Sofia, September 7 (BTA)—Ecologists from Byala protested against yesterday's declaration of Romania's Ministry of Foreign Affairs which was estimated as an attempt to shift the responsibility about the ecological issue in the region of Ruse-Giurgiu.

The Ecoglasnost Society of this town in north-eastern Bulgaria expressed its solidarity with the citizens of Ruse who are permanently breathing the chlorine-polluted air of the chemical combined works of Giurgiu. The ecologists from Byala are insisting upon the observance of the agreements between Bulgaria and Romania and are appealing for President Zhelyu Zhelev's interference in the interest of the final settlement of this pending ecological issue.

Ecoglasnost warned that they will block the stretch near Byala on the Bucharest-Sofia highway for cars with

Romanian registration if urgent measures are not undertaken to solve the pollution problem of Ruse.

Romania, Bulgaria Hold Ecological Talks in Giurgiu

AU1009194690 Bucharest ROMPRES in English
1639 GMT 10 Sep 90

[Text] Bucharest ROMPRES, 10/9/1990—A meeting took place in Giurgiu on September 9 between a delegation of the Romanian Chemistry and Petrochemistry Department and a delegation of the Bulgarian Ministry of Industry and Technology. The two sides' viewpoints on problems related to environmental pollution in the Giurgiu-Ruse-Kosloduy area, which were expressed on September 7, 1990, were discussed.

Upon request by the Romanian side and in keeping with a protocol previously signed by the two countries' prime ministers, whereby both sides agreed to call for an international expert appraisal, it was decided that the proposals, on the nuclear plant at Kozloduy included, be definitely formulated in Giurgiu on September 13. That meeting will also decide upon targets and upon the international bodies to conduct the survey.

The two delegations were led for Bulgaria by Mr. Svetoslav Genchev, deputy minister, and for Romania by Mr. Valentin Ionita, secretary of state, head of the Chemistry and Petrochemistry Department.

Romanian Plant Said To Pollute Bulgarian City of Silistra

AU1309191090 Sofia BTA in English 1739 GMT
13 Sep 90

[“Twenty-Hour Sulphuric Acid Nightmare”—BTA headline]

[Text] Sofia, September 13 (BTA)—For twenty hours the city of Silistra on the Danube was suffocated by another gas-pollution from the Metallurgical Combine Works of the neighboring Romanian city of Calaraci on the other bank of the river. The results of the laboratory tests will be known tomorrow. Experts are expecting that besides hydrogen sulfide the tests will also show positive to benzene, phenol and other organic compounds.

Gas pollutions have lately become disturbingly frequent. Children say that “it smells of train”. But behind the naive children's comparison is hiding the worry of the 60,000-populated city. The three meetings between leaders of the two cities were in vain.

Silistra is situated 90 km northeast of Ruse, the city which has been for 10 years now victim of the Romanian chemical plant which is polluting its air.

Romanian, Bulgarian Environmental Delegates Meet 13 Sep

AU1409150790 Bucharest ROMPRES in English
1323 GMT 14 Sep 90

[Text] Bucharest ROMPRES, 14/9/1990—Another Romanian-Bulgarian meeting on environment took place in Giurgiu on September 13 afternoon. The delegations were headed by Svetoslav Genchev and Georgi Bichev, deputy ministers of industry and technology, and Valentin Ionita and Angheluta Vadineanu, state secretaries, heads of the departments of chemical and petrochemical industry and, respectively, of environment of Romania.

In accordance with the protocol signed on July 4, by the prime ministers of Romania and Bulgaria, Petre Roman and Andrey Lukanov, a joint expert commission had studied over July 16-August 15 environment problems in the Ruse-Giurgiu area caused by industrial plants there. On July 23 to 25, another commission of specialists studied aspects of operation safety of the nuclear power plant of Kozloduy and whether it was advisable on the Bulgarian part to build up more nuclear reactors with higher capacity on the same site and to erect a nuclear power station in the Belene area.

The conclusions of the commissions were recorded in a protocol signed on August 15 in Giurgiu and Ruse and in an aide-memoire signed at Kozloduy. Since both documents contain diverging opinions on the problems under study, it was agreed, according to item 8 of the protocol signed by the prime ministers of the two countries, to draw up a joint report and apply for international survey of all aspects relating to environment protection in the area round the towns of Giurgiu, Ruse and Kozloduy.

Two preliminary meetings of the heads of the two delegations took place on August 30 and September 9, followed by the recent one in Giurgiu, in order to agree on the contents of the joint report.

BULGARIA

Health, Economic Problems Caused by Arsenic Pollution Near Topolnitsa Dam

90WN0231A Sofia ZEMEDELSKO ZNAME
in Bulgarian 18 Jul 90 p 2

[Article by Velichka Petkova: "Topolnitsa Dam Area New Locus of Severe Ecological Catastrophe"]

[Text] Who is going to close down the copper-extraction combine near Srednogorie?

Who is going to calculate in how many millennia the soil on 480,000 decares of arable land will be restored?

Who is going to pay 50 million leva for the farms' short-term losses?

Who is going to identify the guilty parties and convict them?

Who, indeed? In 32 years Lake Topolnitsa has turned into an arsenic deposit. The waters and soil in the river valley by the same name are so polluted that they are unusable in practice. Even if the copper-extraction combine near Srednogorie were closed down, the water would still be no good. Drinking-water sources are affected, too. The only salvation lies in the mineral springs. The arsenic is "sown" on 480,000 decares of arable land. Losses this season alone due to unproduced output are estimated at 50 million leva. And, in the years and decades ahead...? These are some of the facts that impelled Professor Ivan Chernozemski, minister of public health and social welfare, to state, "This is our saddest session."

Unfortunately, only representatives of one side are in his office--representatives of the victims of the socialist industrialization of Bulgaria, the state institutions that manage agriculture and that safeguard the public health. "We are all victims; we are all to blame," one of those present suggested. But no more of this societal responsibility! Because of it and our other, characteristically similar, principles and norms of political and economic morality, we are today announcing the latest in a series of ecological-disaster zones. The rich Pozardzhik plain is doomed. The livelihood of hereditary peasants is doomed. The drought has gripped every living thing. The people are selling their livestock because they will produce no feed. After the ecological crisis there comes social crisis. This is the gift for the Bulgarian peasant that the state apparatus chose for him—the state apparatus to which the people gave everything.

The last hopes of the victims are crumbling, too.

—The idea of mixing the waters of the Topolnitsa and the Belmekan in a 1:1 ratio is nonsensical because the arsenic concentration will still be high. The norms will be achieved only at a ratio of 11:1, but, in this event, the pure Rila diluent will suffice for only 25 days.

- The second possibility is to irrigate at half the norm, which guarantees half the influx of heavy metals. We could rely on the fact that not all parts of a plant accumulate identical amounts of arsenic.
- If we mix a polluted output from this region with a pure output from another region, and what is obtained is something average, something acceptable, we are simply asking for a lesser evil.

The Ministry of Public Health and Social Welfare has now taken a firm position. Hitherto, not one of the three alternatives was adopted—and, in the event, the compromise was tantamount to a crime.

Health agencies will begin examinations of the population, and samples of the foods produced there will also be taken for analysis. Bulgarian norms are half the norms

of the World Health Organization. But specialists rightly believe that the criterion for competence should be the World!

The categorical tone and the desire to protect human health give rise to hopes. The only rational way is the way that starts at the beginning: The plant must be closed down. From this perspective, other consistent actions will be applied.

One more question arises, however: What are we going to do with these 103 million cubic meters of polluted impounded water? In a month Topolnitsa will overflow. Total pollution of springs, soil, and rivers is inevitable. What point of view are the National Water Council experts taking? Who will guarantee the—at least, relative—tranquility of this doomed population? Shall we compel the by-now-specific culprit, whatever post he occupies, to pay what he deserves? He is among us, is he not? His so-called coterie is among us, is it not? Have not the people long awaited true judgments "in the name of the people"?

CZECHOSLOVAKIA

Jaslovske Bohunice Nuclear Power Station To Continue Operation

LD1309181290 Prague CTK in English 1613 GMT
13 Sep 90

[Text] Prague Sept 13 (CTK)—The Czechoslovak government noted today that inspections carried out so far at the nuclear power station in Jaslovske Bohunice, West Slovakia, do not require an immediate shutdown of the plant. A final report is to be prepared by the end of the year.

A shutdown of two units of this oldest Czechoslovak nuclear power station has been demanded by Austria.

The government dealt at its session today with a preliminary report on the safety of the plant's V-1 station and containing the results of inspections carried out by international and foreign organization by the end of the year. The inspections have been started and are being carried out by the Siemens Company of West Germany, Austrian government experts, the International Atomic Energy Agency (asset mission) and the European Community.

CSFR Power Station Emission Reduction To Cost 22 Billion Kcs

90WN0199B Vienna DER STANDARD in German
6 Jun p 15

[Article: "CSFR Wants To Decontaminate Power Plants for 22 Billion"]

[Text] Prague—The Czechoslovak Ministry of Fuels and Power wants to invest a total of 22 billion kcs in the desulfurization of calorific power plants by 1996. According to the CSFR's own estimates, the power

plants emit about 3 million tons of sulfur dioxide annually through the firing of low-grade coal.

After unsuccessful attempts with Soviet environmental technology, the CSFR now wants to fall back on Western techniques.

Numerous talks are now underway, whereby the consortium Saarberg-Hoelter-Lurgi [FRG] is conceded the best chances.

Last year the group founded the joint venture, OTES [expansion unknown], which is now building a desulfurization facility for a 200-megawatt block of the Pocerady Power Plant. The Hitachi concern is also given good chances, to the extent that the Japanese are prepared to establish a joint venture with a local partner.

Austrian offerers are currently not on the list of favorites of the Ministry of Fuels and Power.

GERMAN DEMOCRATIC REPUBLIC

Nuclear Power Plants To Be Shut Down After 3 Oct

AU0709101890 East Berlin NEUE ZEIT in German
3 Sep 90 p 2

[NZ/ADN report: "GDR Nuclear Power Plants Will Be Shut Down"]

[Excerpt] Saarbrucken—After the GDR's accession to the FRG on 3 October, the GDR nuclear power plants will be shut down for safety reasons, Martin Bangemann, vice president of the EC Commission, announced. Responsibility cannot be accepted "for such facilities, which do not correspond to our safety regulations, to continue working." Bangemann expressed the expectation that the demand for energy resulting from this step will be covered through links for electricity supply with the EC. [passage omitted]

HUNGARY

Air Pollution, Catalytic Converter Issue Analyzed

90CH0263A Budapest MAGYARORSZAG
in Hungarian 8 Jun 90 p 24

[Article by Erika Zador: "Ecology: It Is Costing 11 Billions; The Price of Treaties; Manufacturing Catalytic Converters."]

[Text] We are choking on the streets of Budapest. Each morning a pleasant-voiced female radio announcer tells us, in an entirely natural manner, how far the carbon monoxide or nitrogen oxide (NOx) content of our air exceeds the level of harmfulness. Meanwhile, we are reminded of such things as the Geneva Convention, the Montreal Memorandum or the Bergen Declaration: these international agreements call for reducing, hopefully before it is too late, the emission of pollutants that

are harmful to our environment and our health and are exposing the earth to the effects of a "slow nuclear war." Hungary has either already joined these agreements, or is now ratifying them. Protecting our environment has always been a serious matter, but now that we are trying to close the gap between us and the developed world, we must be even more diligent about obeying international treaties.

Can The Country Take It?

However, joining these treaties is not simply a question of making a decision. Even when a country's technological development is quite high, respecting the prescriptions of environmental protection means considerable extra expenditure. In Hungary, where much of the technology is behind the times, the quality of energy resources is low, and the average age of the vehicle park is over 12 years, it may be asked: Can the country bear the burden represented by the prescriptions of environmental treaties? This is the question to which experts (economists, engineers, meteorologists, physicians and chemists) sought the answers, at the request of the National Committee for the Development of Technology (OMFB). They published a thoughtful study which describes the system of conditions necessary for fulfilling our international obligations in the area of atmospheric pollution. As Dr Jeno Fekete, one of the study's coordinators, said, we are facing both the expenditure of heavy billions in every sphere of our activities, and changes in organization and philosophy.

One of the most evident examples is the area of transportation. According to 1987 data, vehicular road traffic contributes to our atmosphere 38 percent of its carbon monoxide, 31 percent of its nitrogen oxide and 35 percent of carbo-hydrogens. While the nitrogen oxide emission of power plants and other pollution sources was reduced by 20 percent between 1980 and 1990 (due to the introduction of more modern technologies), in the same period pollution caused by road traffic increased by 10 percent, and the study forecasts a further 20 percent increase during the next five years. We are talking about huge quantities: The 1990 emission is estimated at 120,000 tons.

Experts are proposing organizational measures that would be relatively inexpensive and could be implemented through technological development. Railroad or water transport facilities emit about one-tenth as much nitrogen oxides per unit as road transport. That means that if some of the travelers and shippers could be encouraged, with the application of suitable tariff regulations, to use railroads, water or mass transport facilities, the emission of nitrogen oxides would be cut by 10-12 percent each year. Alas, even though the standards of living are declining, the number of personal automobiles is growing; moreover, these are not vehicles that are easy on the environment (as in the developed countries) but vehicles that are old and therefore even more likely to pollute.

Tax-Breaks Are Due

Of course, the situation could be improved. In the case of gasoline-powered vehicles, the best solution is to install regulated three-way catalytic converters (and thus reduce nitrogen oxide emission by 70-80 percent), which would increase the price of an average car by 10-15,000 forints. Unregulated three-way catalytic converters, which would cut emission by 40-50 percent, would add "only" 10,000 forints to the price. Reducing early ignition (which would bring a 5-15 percent improvement), costs 500-1,000 forints, while re-directing the emitted gases (30-50 percent improvement) costs only 1,000-3,000 forints. True, the cheap (but effective) methods also bring about reduced efficiency and a cut in gas-mileage, while the catalytic converters require the use of lead-free fuel. With diesel-driven vehicles, similar interventions could bring similar results. The best results could be achieved by installing more modern engines; however, this would require the expenditure of 30,000-40,000 forints per car.

In more developed countries the consumers are encouraged by tax breaks to purchase the more expensive but environmentally less harmful cars. The OMFB study also proposes that the government should significantly reduce the duties to be paid on cars equipped with catalytic converters which individuals bring into the country. It also proposes that, since we cannot prescribe the factory installation of catalytic converters on cars we are presently importing, we should at the earliest opportunity begin manufacturing catalytic converters domestically, so that in the future only cars with such equipment could put into operation. In five years' time, this would reduce the predicted growth in nitrogen oxide emission by 5,000 tons annually; at the expense of 4.5 billion forints which would have to be paid by the consumers.

Catalytic converters can be installed in cars no older than four years; this would represent another reduction by 1,500 tons of nitrogen oxide emission each year; in exchange for the expenditure of 1.5 billion forints which, according to Dr Jeno Fekete and his colleagues, should be split between the consumers and the national budget. The use of catalytic converters requires additional maintenance and reduces gas mileage, which would increase their cost by another 0.5 billion forints. In addition, we should make sure that enough lead-free gasoline is available. According to plans, by 1995 we could have enough of this type of fuel to supply cars equipped with converters. For the time being, the use of this environmentally safe fuel by the other cars is out of the question. Thus, it cannot be expected that, similarly to the developed countries, drivers would be encouraged to use this type of fuel by reducing its price.

All in all, by 1994 we could reduce the highway emission of nitrogen oxide by 12,000 tons annually; at the price of one billion forints for each 1,000 tons. It is good news, according to the study, that with the spreading of new technologies we may expect significantly reduced

nitrogen oxide emission levels in industries, especially in the production of electric energy.

Thus far we have spoken only of transportation, and only one polluting aspect of that activity. However, in addition to nitrogen oxide, vehicles also emit carbon dioxide, carbon monoxide and hydrocarbons; the power plants and carbo-hydrogen-burning stoves release sulphur dioxides, while spray cans, punctured refrigerator cooling units and certain processes of chemical industries put halogenized hydrocarbons into the atmosphere, etc. The OMFB experts made an estimate as to how much it would cost to reduce the sulphur dioxide emission by 90 percent (involving the stabilization of 80,000 tons annually) with the use of various methods. The project would require an investment of 3.5-5 billion forints, and operating costs would also increase greatly. True, if some of the by-products could be sold (in the form of cement, sulfuric acid or pure sulphur), a portion of costs would be regained. However, even using the most favorable calculations, the price of one kilowatt of electrical energy would increase by 0.41 forints.

Time Is Running Out

The above notwithstanding, it is obvious that time is running out, and we must make sacrifices when it comes to this issue. After all, the pollutants mentioned above not only find their way into the atmosphere, but also stay there. For example, nitrogen oxides remain toxic for 25 years, and halogenized carbon hydrogens for 45-70 years. And the problem is becoming ever more serious: Regrettably new technologies often introduce new pollutants either because we find out about materials hitherto considered safe are in fact very harmful, or because a method, more precise than earlier ones, shows that the "pure" steam-water released by modern power plants transports hazardous elements (accumulated in the soil) to the environment.

So how can our country, struggling with an economic crisis, participate in global efforts made against environmental pollution? we asked Dr. Jeno Fekete, who assisted in preparing the EGB conference for environmental protection held in the Norwegian [city of] Bergen. According to him, Hungarian participation in the

international agreements is one of the conditions of closing the gap between ourselves and Europe. However, in each case we must examine whether we have the resources to implement those agreements; are we able to cover our share of the costs, or do we need to use foreign assistance? We must develop a suitable network of monitoring stations. We must introduce measures that are synchronized, so that we should not experience cases when a measure intended to protect the environment actually causes pollution elsewhere. We should not join international agreements just to receive "points," and we should take on responsibilities only if we can meet them.

POLAND

Soviet Military Units Inspected for Pollution Problems

LD0409204990 Warsaw PAP in English 1700 GMT
4 Sep 90

[Text] Szczecin, Sept. 4—Four inspectors of the natural environment department of the voivodship office in Szczecin carried out a preliminary ecological inspection of two Soviet units stationed in the Szczecin voivodship: the navy base in Swinoujscie and the airport in Chojno.

Oil leaks from old German tanks to surface and underground water drew the most criticism on the Swinoujscie base. It is estimated that the oil leaks could amount to 400 L [as received] daily.

In Chojno, sewage is directed to the Rurzyca River and local forests through rain and farming canals. The inspectors stated that the soil was soaked with oil around the fuel distribution station, with underground being affected. No safety measures were noted. All the local bodies in the premises of the airport operate without filters. There are no formal-legal arrangements governing the use of the environment by the Soviet troops.

The Soviet airport in Kluczewo will be inspected in the near future. It is situated near the Miedwie Lake which supplies drinking water for Szczecin.

BARBADOS**Opposition Wants Environment Ministry Established**

*FL1209153190 Bridgetown CANA in English
1500 GMT 12 Sep 90*

[By Peter Richards]

[Text] Bridgetown, Barbados, Sept 12, CANA—Opposition parties in Barbados want an Environment Ministry and more laws to deal with problems such as the disposal of hazardous waste. They talk emotionally of a need for banning leaded gasoline and for beefing up laws to keep the island's air and water supplies safe.

The focus on the environment came during a symposium organised by the Barbados Environmental Association (BEA). Representatives of the ruling Democratic Labour Party (DLP), the main opposition National Democratic Party (NDP), and the Barbados Labour Party (BLP) participated.

Minister of Employment, Labour Relations, and Community Development Keith Simmons said that the government had established the National Conservation Strategies (NCS) last March, as a means of having an organised framework under which it will tackle matters related to the environment. But the opposition parties say the failure to have a separate ministry to deal with the environment shows that the government does not give environmental matters the priority they deserve.

"The NDP has already committed itself to the establishment of a Ministry of the Environment should this party be given the honour and the privilege of forming the next government in this country," said Vere Brathwaite, the NDC's shadow minister of the environment.

Aaron Truss, the BLP's spokesman on environmental matters, said that on assuming office in 1986, the DLP government immediately dissolved the Ministry of the Environment set up by the BLP.

"Environment did not appear to be a major factor," Truss said, adding that only on occasions such as World Health Day did the government speak publicly about the problems of the environment.

"Has the present administration any plans.... to deal with the issue?" Truss asked. "It is imperative that a Ministry of Environment be established immediately."

But Simmons asserts that the government now has three ministries to deal with the environment and a bigger staff. All three political parties admit that there is need to educate and sensitise Barbadians about the dangers of damaging the environment.

"If our programmes and policies are to succeed, then the general public must respect the environment," said Simmons.

"The move towards education.... is important and must be an ongoing process....," said Ms. Brathwaite. "The 1990's present to us the challenge of educating Barbadians about the value of our heritage and the resultant duty of each citizen to guard it jealously...."

"We must engage in an ongoing programme of education.... Protection of the environment is important, but management is vital," BLP's Truss noted.

The two opposition parties say that should they form the next government, an immediate task will be to pass laws to ensure that development of the island does not mean accelerated environmental damage. They reported that the proposed legislation will cover the disposal of hazardous waste and the protection of coastal zones as well as water and air.

"The people have a right to know how safe is the air they breathe, the water they drink....," said Truss.

The NDP wants laws aimed at a more complete burning of gasoline hydrocarbons. The party said an NDP government would ensure that only unleaded gasoline was be sold here.

"Furthermore, the transportation of the lead to be added in the blending of gasoline here in Barbados also raises grave concerns as this lead travels through Bridgetown in unmarked, unescorted, open [word indistinct] flat-bedded vehicles without any proper preventative or corrective emergency measures in place in case of a spill or accident," Ms. Brathwaite complained.

The three political parties have all pledged a programme of reforestation.

BOLIVIA**Coca Plantations Threaten Forest Reserves**

*PY1309031490 La Paz PRESENCIA in Spanish
6 Sep 90 p 6*

[Excerpts] More than 15,000 hectares of forest in the Isiboro Secure Reserves, on the border of Cochabamba and El Beni Departments, have been removed and replaced by coca plantations.

Bolivian ecologists have said that if this situation continues, there could be an imbalance in the microclimate both in Bolivia and in adjacent regions.

They added that the government should take urgent measures to preserve forest reserves in the area as part of the policy of "ecological protection" formulated by the executive branch early in 1990.

It is estimated that over 8,000 settlers, most of them from the Chapare Region, have thus far established themselves in the reserves.

The League for the Defense of the Environment has said: "Drug traffickers, ranchers, and wood exploitation companies are forcing the tribes living in the Isiboro Secure Reserves to go into the forest interior." [passage omitted]

Ecologist sources reported that the Isiboro Secure ecological reserves are being threatened by coca growers and drug traffickers who have installed several laboratories that are protected by difficult access to the forest.

BRAZIL

IBAMA, Environmental Secretariats Sign Agreement

PY1109011890 Brasilia Domestic Service in Portuguese
2200 GMT 10 Sep 90

[Report from Sao Paulo by Regina Martins]

[Text] IBAMA [Brazilian Institute for Environmental Affairs and Renewable Natural Resources] and the environmental secretariats of Sao Paulo, Rio de Janeiro, Espirito Santo, Parana, and Santa Catarina States have signed an agreement to preserve the Atlantic Forest and the Serra do Mar. This program will be funded by the World Bank and the Federal Government.

The agreement signed today is part of the first stage of the National Environmental Program [Programa Nacional do Meio Ambiente]. This program is financially supported by the World Bank, with \$117 million, and by the Federal Government, with \$49.4 million.

Considered to be the world's second most endangered ecosystem, the Atlantic Forest formerly covered 10 percent of the Brazilian territory, that is, nearly 850,000 square kilometers. Today, barely 3 percent of that area is left.

The funds approved today will be used in areas involving control, scientific research, environmental education, self-supported development, and conservation units.

DOMINICAN REPUBLIC

Camu River Described as 'Dying'

90WN0251A Santo Domingo EL SIGLO in Spanish
4 Aug 90 p 4

[Text] La Vega—The once abundant and crystal-clear Camu River is now a creek, whose water, polluted by the dumping of industrial waste and grease from vehicle washes, flows slowly, clearly attesting to the fact that the time of its disappearance is approaching.

The Camu used to be a river respected by everyone. Now, not even the children respect it because, taking advantage of the meager water flow, they cross from one side to the other every day without any trouble.

No one cares about the aforementioned river, with its headwaters on La Sal ridge, in Jarabacoa. For this reason industrialists dump their waste in it, as the authorities look on with apathy.

For that same reason car owners and other vehicle washing establishments dump their grease and trash into the forgotten, mistreated Camu.

This abuse has converted it into a river with little, but heavily polluted water.

The Camu's former turbulence has given way to the unbridled action of the La Vega residents, who have polluted it so much during recent years that, according to the director of the agronomy course at Cibao Technological University, engineer Felix Diaz, its water is not fit for human consumption.

Diaz remarks that many people who have bathed in the well-known river have emerged covered with grease. He points out that this is due to the fact that industrialists and owners of vehicle washing establishments dump waste, grease, and trash into it.

The Camu is filled with undergrowth, which has rapidly replaced the water that it previously contained at its center. The undergrowth of weeds in the middle of the river gives the impression of a field abandoned by its owners.

According to engineer Diaz, the pollution of the Camu begins at the El Hatico bathing resort, where the bathers also wash their vehicles.

Diaz claimed that a large amount of gas oil and detergent flows through the Camu regularly, noting that all this has caused the accelerated pollution of its water.

He explains that this is why La Vega's inhabitants are constantly suffering from stomach and viral ailments.

As the university official points out, pollution of the aforementioned river has caused the extinction of many species that had formerly inhabited its waters.

Engineer Diaz not only cites the disappearance of aquatic species, but also indicates that the river has lost the beauty that it had previously had.

Diaz says that the potable quality of the Camu's water has declined greatly, noting that anyone drinking it could become ill.

He also observes that the supply of water for growing Chinese vegetables in the La Vega peasant communities has been cut because of the decline in the Camu.

In view of the serious situation of the once abundant river, the vice chairman of the La Vega Natural Resources Defense Committee (CODERENA) recommends protection for the watershed over a 30-meter radius, with the planting of bamboo, and a ban on the dumping of waste and grease.

Diaz suggests that the collection of waste material be regulated, stipulating locations and times, and that the washing of vehicles on the banks of, or in the river be restricted.

He deems it necessary for the new authorities and the residents of La Vega as a whole to take action aimed at saving the Camu.

Meanwhile, the once abundant river appears to be slowly taking its leave of the La Vega's inhabitants. If no heed is paid to it, within a short time it will become one of the hundreds of rivers which have already disappeared in the country.

Ozama River Contamination Endangers Locals

*90WNO278A Santo Domingo EL SIGLO in Spanish
22 Aug 90 p 12*

[Article by Fausto Rosario Adames: "Industrial Pollution Is Killing the Ozama River"]

[Text] Ramona Beltre, one of the many women who live almost on the bank of the Ozama River, fears that on the day it rises in fury, a disaster will ensue.

She testifies to her fear when she speaks of it in public. Sitting on a bench in front of a washing trough full of clothing, she says that "one lives in fear, thinking that the river can rise and do great harm to one of the children here."

Her worry, seemingly, is for her two children, the two playing half-naked and barefoot in the dirty water she dumps in front of her house, further muddying the path leading to it.

"And then look at all of this mud here," she says, pointing to the greenish clods of earth in front of her home. "I have nothing but these two children," she went on to say, "and all of this problem is doing them great harm."

The Ozama River is a constant threat to the residents of La Cienaga. It is a kind of black phantom which returns night after night, augmenting the dark fears which are fed during the day by the alleyways, the accumulation of garbage, and the grunting of the pigs which are more swinish than any others.

In the days when the Ozama River was not contaminated, the residents of the neighborhoods located on its banks regarded it as a source of life, a resource for sustenance. The residents of La Cienaga in particular, satisfied their need for food from it. Nowadays this is no longer true, because with the passage of time, the river has come to be a symbol of death, a threat.

In the past, fish, shrimp, and crayfish for family sustenance and for sale were caught in the river waters. "Its banks provided a beautiful promenade, shaded by numerous fruit trees. The river irrigated our small farms and vegetable plots. The neighborhood was like a bit of

countryside within the city, with chickens, pigs, and horses... The children swam in the waterholes, or played ball on the banks. The river never overflowed its banks."

This is what the residents of the neighborhoods remember, according to a pamphlet put out by the Committee for the Defense of Neighborhood Rights (COPADEBA), based on the conclusions reached by a workshop on the river.

This beautiful memory is now a matter of history, and the river has become a tremendous calamity, a constant threat, a symbol of death for the almost 40,000 individuals who make up the population of La Cienaga.

But the pollution is being caused not only by the residents, but by the many industries which dump their chemical wastes there, killing off the life in the river. Thus they have taken away from those who obtained nourishment from the river any future possibility of an easier life.

It is no longer possible to swim in the river waters without the risk of contracting skin diseases or suffering from serious vomiting.

It was demonstrated in a study carried out in 1984 by the National Institute of Housing (INVI) and the Organization of American States (OAS) that the sporadic flooding which has occurred "has not been the result of major freshets along the river, but of the rise in the level of its waters caused by the tides."

The study added that the locations where there is constant flooding have been affected since Hurricanes David and Frederick swept through in 1979. "Since that date, the flooding problems in question have been occurring constantly."

Other instances of flooding, the authors went on to say, occur as a result of the large volumes of silt carried along by the river. When it is deposited near the mouth of the river, the water level rises.

Another thing which works against the La Cienaga sector is the fact that the Ozama River has not been dredged since the passage of Hurricanes David and Frederick, as was done, for example, with the Haina River.

Amparo Chantada, one of the experts who works on the Alternative City Project analyzing the environmental damage caused by the Ozama and Isabela Rivers, says that the turbidity of the water reveals the presence of nitrogen and phosphorous originating from residues of fertilizers and detergents. Also patches of petroleum and oils are found in the water.

The damage being done is visible, and is obvious to anyone who approaches the banks of the Ozama and Isabela Rivers. In addition to the garbage which can be seen in the river, however, there are other extremely dangerous contaminants which are not so easily detected.



At a seminar organized by the Environmental Commission at the Autonomous University of Santo Domingo (UASD), Dr. Chantada identified these elements as chemical residues and industrial waters loaded with lead, mercury, zinc, copper, and DDT. "These cause toxicity because of the effect of biological magnification, better known by the name of the disease which once killed thousands of Japanese—the Minamata disease."

This illness is characterized by a gradually increasing concentration of toxic substances in the adipose, blood, and nerve tissues of the organism.

This description is based on a thesis submitted to the Department of Biology at the UASD which established the seriousness of the alteration in the water quality by means of chemical and microbiological analysis. For 18 months, students took samples and established the presence of coliform bacillus—salmonella—in more than 24,000 milliliters, causing the water to have a disagreeable odor and taste.

The oxygen values were in all cases below the standard limit for water in open systems, and the biochemical

oxygen demand varied between zero and 0.5 milligrams per liter. This showed that the volume of organic material was so great that the dissolved oxygen was in inverse ratio to it.

The presence of detergents and greases in the surface water revealed a very high level of industrial pollution, in particular opposite the Timbeque plant of the Dominican Electricity Corporation.

A study carried out by the Dominican Institute for Integral Development (IDDI) on river pollution said that "the most alarming thing is that the waters are very turbid, and they contain harmful chemical substances which are a threat to health, such as chromium, among others..."

Amparo Chantada says this means that it is not the neighborhoods which are further polluting the river, but "the industrial enterprises, those owned by the state in particular, and the National District City Council's Guaricano garbage dump."

The worst river contamination is found in La Zurza, where all of the industries in the environs dump their waste into the water. "The 53 industrial establishments located on Maximo Gomez Avenue dump their untreated waste into the stream. There are 19 of them which bear the greatest responsibility," Dr. Chantada said in her report.

She added that with its cement plant, the CORDE [Dominican Corporation of State Enterprises] uses 33 million gallons of water per month, and it subsequently discharges all of this water, untreated, into the Isabela River. A similar situation occurs with the chemical wastes of other enterprises, which dump large quantities of "hot" biochemicals into the waters of the Isabela and Ozama Rivers.

In a seminar held on the subject of the river by the COPADEBA, the participants concluded that "there are two principal causes of river contamination. The first and most serious involves the industrial plants which dump their waste in it, and the second is the lack of services in the neighborhoods which have grown up along the riverbanks, as a result of which the people dump garbage and fecal waste in the ravines which empty into the river."

They went on to say that they were aware that the river reflects social discrimination, and that although it is the large enterprises which are responsible for the pollution, the poor are blamed and an effort is made to force them out.

Jose Ceballos, the head of the COPADEBA, said when questioned about the possible fate of the residents on the riverbanks that there are areas where relocation is necessary, but fortunately, La Cienaga still has the potential for effecting such relocation without having to move these individuals outside the district.

"The river should be the focus of attention beyond the problem of housing, because in addition to the problem of the neighborhoods near it, there is the problem of industrial pollution," Chichi, as Ceballos is more commonly called, said.

He said that rehabilitation of the river cannot be achieved by means of some processing plant. In addition to preventing contamination, he stated, a campaign must be launched to recover the river land—not precisely that taken from it by the neighborhoods, but rather that belonging to some entities such as the State Sugar Council and some livestock-breeding enterprises, which have taken away land in the region of its headwaters which it needs to supply itself all along its length.

The seminar on the subject of the river held by the COPADEBA reached conclusions along this same line. At that seminar it was deemed necessary to make everyone aware of the importance of the river to the city, and of the right of everyone to enjoy its benefits and the duty of all to care for it.

The seminar proposed the development of an ecological policy for the river, beginning with the laws needed for its implementation, since it is the private enterprises and the state whose duty it is to fulfill these norms.

The fate of the residents of La Cienaga—if indeed one is still possible for them—depends on comprehension of the fact that the river cannot survive these occasional furies. It has already tolerated the toxic waste and the chemical refuse well enough, and it is thanks to this that its victims have been few.

GRENADA

Union Expresses Concern Over Waste Conversion Project

*FL0409181890 Bridgetown CANA in English
1704 GMT 4 Sep 90*

[Text] St. George's, Grenada, Sept 4, CANA—The Grenada Trade Union Council [TUC] has voiced concern over an agreement which the government recently signed with an American firm, Waste Conversions Limited, to turn waste into electricity. The TUC, in a statement, said that it was worried about the way in which the agreement between the U.S. company and the government was formulated before any consultation with labour took place.

Under the deal worked out, the state-run Grenada Electricity Company (Grenlec) is to be closed down, making way for a new plant to be built by Waste Conversions Limited in St. George's north-west. Grenlec would provide back-up services in case of a breakdown at waste conversions.

The TUC questioned whether the six-month old administration can adequately guarantee that no waste will be imported for the project and whether the American firm would provide technological equipment to monitor and ensure environmentally safe emissions from the power plant. Other concerns highlighted in the statement related to whether government had the trained personnel and equipment to independently monitor the emissions to ensure Grenadians' health is not jeopardised.

Further on Concern Over Waste Conversion Project

*FL0609180390 Bridgetown CANA in English
1709 GMT 6 Sep 90*

[Text] St. George's, Grenada, Sept 6, CANA—An American company's plan to use waste to generate electricity for Grenada has run into trouble, with the government ruling out the possibility of quick parliamentary approval. Well-informed sources said that while the government had initially agreed to the project, it could be a long time before Parliament is asked to sanction the deal because of protests here.

Public Utilities Minister Phinsley St. Louis told CANA [CARIBBEAN NEWS AGENCY] the Grenada Government will not take the electricity plan to Parliament until

it was sure concerns raised by Grenadians had been settled. The American company, Waste Conversions Limited, wants to produce electricity from waste. A white paper on the project is in circulation here.

"We cannot in our own conscience pass (this) in Parliament," said St. Louis, who noted opposition to the project.

The opposition New National Party (NNP) led by Dr. Keith Mitchell has opposed the project on grounds that it will pose a major threat to the environment. Other Grenadians have also reacted unfavourably to the project, said St. Louis.

St. Louis said the government would be foolhardy to go ahead with implementation of the controversial project. He is confident that the foreign firm would not want to spend money on the project since there "would be mass uproar over it."

"We on the other hand, will not want to give something to the people which we think is not good for them," he said.

The minister said the government would discuss the problems with the company "and if (the concerns) cannot be addressed successfully we would not go on with (the project)."

HONDURAS

Contamination of Sula Valley Rivers Described

90WN0274A Tegucigalpa LA TRIBUNA in Spanish
21 Jul 90 p 4-B

[Text] Consulting engineer Peter E. Robinson offers an extensive treatment of the serious problem existing with the environmental contamination of the Sula Valley rivers. Since we regard it as highly significant, we are presenting an excerpt from that report.

Emptying into the Chamelecon River, in the San Pedro Sula region, is a complex network of water courses originating in its northern section. To better understand the situation, we shall describe the system in its present form, after the construction of the flood protection systems (primarily dams along the rivers), executed as a result of hurricane "Fifi."

Flowing in the far north are the Armenta and Zapotal Rivers, which combine to form the Blanco River. The Blanco River flows in a southeasterly direction until it enters the canal formed by the Sauce River dams. Upstream of that site a branch carries part of the Blanco River volume of flow to Lake El Carmen, located farther to the north.

Some distance south of the Armenta and Zapotal Rivers, two rivers (the Piedras and Santana) flow down from the mountain, circulating from west to east. Following the crossing under the highway and the railroad to Puerto Cortes, they combine to form the Sauce River. After

flowing southward for one km, the Sauce forks: one branch heads southward and the other more to the southeast.

The second branch joins the Blanco River, which originates in the north. Then the combined volumes of flow head for the southeast, and later eastward, until they empty into the Chamelecon River, after having traveled for about 12 km. Upon nearing the Chamelecon, the Blanco River reaches the flood-plain located south of Lake Jucutuma, toward which the water flows during certain seasons of the year.

The first branch of the Sauce River flows in a southerly direction along the eastern border of the urbanized area of San Pedro Sula, for a distance of about six km. There, it is joined by a water current created by the Sunseri Canal. The combination of the two water courses is known as the Chotepe River. The latter flows eastward and, about seven km farther, turns toward the northeast, and empties into the Chamelecon River, after having covered another three km. The junction of the Chotepe and the Chamelecon is located some 500 meters upstream of the junction of the Blanco River described previously.

As the catch basins collecting most of the sewage produced in San Pedro Sula have been depicted, they have their outlets at various points along the rivers described.

North of the point where the Sauce River forks, all the sewage collected by what is called the Northern Trap is discharged into the Sauce River, just south of its fork. There are only two small outlets more to the north, on the Sauce River, originating in two urban developments not currently connected to the Northern Trap. The industries located north of this point discharge their sewage directly into the Piedras and Bermejo Rivers. There is at present a diversion dam at the fork of the Sauce River which, during the low water season, forces the entire volume of flow originating in the north along the Sauce River to circulate toward the Blanco River. Thus, no appreciable amount of domestic sewage circulates through the Blanco River, but a considerable portion of the city's industrial sewage flows along that river.

The rest of the traps, primarily in the city, running from west to east, discharge directly into the Sauce River or the Sunseri Canal. This canal begins approximately in the Tepeaca district, flowing parallel to the Sauce River, about 1.5 km to the west. Therefore, the Chotepe River (formed by the junction of the Sauce River and the Sunseri Canal) carries virtually all the sewage produced in the San Pedro inner city, discharging it into the Chamelecon River.

Upon reaching Puerto Cortes, the Chamelecon River divides into a network of water courses, some of which are natural, like components of a delta, and others are artificial canals. Most of their water flows toward Lake Alvarado, which connects directly with the sea.

To summarize, both the Blanco and the Chotepe Rivers are currently nothing but open sewers during the low water season, although the status of the Blanco is slightly better than that of the Chotepe.

Fortunately for the region, all these water courses are contained at present within dams, built for the purpose of flood control and/or for agricultural irrigation purposes. The only use made of their water is for irrigation, except for washing clothes in certain Blanco Riverlocalities.

Nevertheless, some residents near their shores consume water from wells that could be polluted, owing to their proximity to these veritable sewers.

The notable fact that direct discharges are occurring into receiving bodies, specifically, in this area, into the Sauce River and the Sunseri Canal, respectively, has a serious effect on the health of the nearby population residing on the shores of these river beds, or having to pass through this area, whether because they live in the lower part of the city, or because their work centers are located close to these spillways.

As a result of the presence of raw sewage there are high levels of contamination, owing to the presence of gases (methane, ammonia, hydrosulfuric acid, etc.), and the low concentrations of dissolved oxygen present in the residual water. This not only produces unpleasant odors but also causes endemic diseases, especially among children. Another significant feature in the trap area is that, since the Honduran Sugar Company (CAHSA) uses the sewage to irrigate the sugar cane crops during the summer season, it is necessary to control the volume of flow carried, so as to improve the water depth and to incorporate that flow into diversion channels.

When the gate is lowered and the passage of sewage is not permitted through the Sunseri Canal, upstream of this point a dam is created in which, within short periods, the sewage returns totally septic. This creates problems for the residents of the Sula Valleys I and II and Flor del Valle settlements.

The gate is situated about 200 meters south of the Sula Valley II settlement.

The unspecified sources of contamination that may exist in the city and its environs are:

A. Pollution in the upper portion of the Piedras, Santa Ana, and Zapotal River basins.

DIMA [Directorate of Environment] maintains these basins as forest reserves; however, they contain animals and some dwellings that are probably damaging the quality of the water, but only the bacteriological quality. This problem is being quite well controlled by DIMA.

B. Pollution from runoff coming from planted land.

Toward the south and southeast of the city there are fields planted with bananas and sugar cane on which

pesticides are applied. The latter eventually reach the Blanco, Chotepe, and Chamelecon Rivers. At the moment, there is not sufficient information making it possible to express an opinion on this potential source of contamination.

C. A highly significant source of contamination along all these rivers and in adjacent areas is the dumping of garbage, which appears to be widespread.

There are also a few dwellings on the banks of the rivers, using latrines with direct discharges of excreta into the rivers. This last source of contamination is not quantitatively important, but is extremely dangerous as a potential vector of epidemics.

Along certain sections of the Chamelecon River large amounts of banana stalks are usually heaped on its shores, eventually falling into that river.

The Blanco River crosses an area devoted mainly to livestock raising; hence, its waters are not used for irrigation in any appreciable amount.

The situation of the Chotepe River is different. A large portion of its water (at times, nearly all of it) is used for irrigating sugar cane fields. Thus, those fields are irrigated primarily with sewage. The irrigation is done using canals. This situation should not pose any health problem, because the sugar cane undergoes extensive cooking processes before it is consumed as sugar.

Downstream of the site selected by DIMA for its future sewage treatment plant there are banana plantations on both sides of the Chotepe River. Those fields are irrigated with water from the Chamelecon River, and the irrigation is done by sprinkling. In no instance is water from the Chotepe River used to irrigate the banana plants.

Of all the rivers in the San Pedro Sula region, the Chamelecon is the one in the best condition. Near the settlement called Chamelecon, alongside the San Pedro Sula-Tegucigalpa highway, there is a beach zone for public use on the Chamelecon River.

Besides its recreational purpose, the river is used extensively, at various sites, for washing clothes and irrigation. Hence, we know that this river is not used as a source of drinking water for communities, at least not this part of the river. Downstream of La Lima we do not think that there are communities using it as a water source either.

As was noted previously in this report, the Chamelecon River forks when it arrives near Puerto Cortes. A smaller portion of its volume flows directly toward the sea through a delta located east of Puerto Cortes. Most of the volume flows westward through the Alvarado Canal, until it empties into Lake Alvarado.

This lake is a partially brackish body of water, with an area of approximately 8.4 square km and a depth of up to five meters. The lake connects with the sea through a

narrow entrance at its southwestern end. The tide difference in the lake does not exceed about 10 cm. There is mangrove swamp vegetation around the lake. The current uses of the lake are limited; only sporadic fishing is done. Several low bridges prevent the entry of boats, except those of low height.

During 1984 the consulting firm AVECO completed a study for the Total Development of Lake Alvarado. The purpose of that study was to determine the feasibility of using the lake as a fishing port, for coastwise trade and tourism.

Recommendations: Lake Jucutuma as an intermediate receiving body for the sewage from San Pedro Sula; its location and size make it attractive, provided that this use does not entail irreparable damage to the lake and its purposes.

An expansion of this plan might be: providing canals and control structures to carry the combined volume of flow from the Blanco and Chotepe Rivers to the lake during low water periods on those rivers.

One or two sections of the lake would be isolated from the rest of it, through the construction of dams. The latter would cross the lake to the waters originating in the rivers entering that section which, at the same time, would act as an oxidation pond.

And there would be a hydraulic improvement in the discharge of water from the lake, also forming control structures.

To make this plan feasible, one must accept the fact that the Blanco and Chotepe Rivers would continue to be open sewers.

PARAGUAY

Law Banning Import of Industrial Waste Approved

PY0409025090 Asuncion HOY in Spanish
3 Sep 90 p 11

[Text] A law prohibiting "the import, storage, and use of refuse, industrial waste, and garbage" and establishing the appropriate penalties for offenders has been automatically approved because the constitutional deadline for debate by the Chamber of Deputies has expired.

Therefore, only the Senate was able to approve it. According to the new law, which the executive branch must now promulgate, "individuals and companies in

general are prohibited from importing refuse, industrial waste, or garbage and from facilitating in any way whatsoever the entry, receipt, storage, utilization, or distribution of these substances anywhere in the country."

The law states that there are no exceptions to this ban "because these substances constitute either present or future risks for the quality of life of the people, damage the soil, flora, and fauna, or contaminate air and water to the point of harming the health of human beings or the environment of the country."

The Ministries of Public Health, Agriculture and Livestock, and Industry and Commerce will issue the appropriate regulations to implement the law.

PERU

Promulgation of Ecological Code Announced

PY0809223090 Lima Television Peruana in Spanish
0100 GMT 8 Sep 90

[Text] During a news conference, Minister Juan Carlos Hurtado Miller has announced the promulgation of the ecological code and referred to an alleged telephone interception denounced at congress. [only reference to subject as heard] Hurtado Miller was accompanied by Agriculture Minister Carlos Amat y Leon and Industry Minister Guido Pennano.

[Begin Hurtado Miller recording] The code promulgated by the president of the Republic contains 22 chapters, two special provisions, two final provisions, and some temporary clauses.

This document, which is very important for the country, deals with aspects of the environmental policy as a whole, environmental planning, environmental protection, security measures, assessment and control of science and technology, education, communication media, citizenship's participation, natural heritage, biological diversities of the ecological systems, protected natural areas, cultural patrimony, mining and energy resources, population, environment, preventive measures against natural disasters, public health, public cleaning, water and sewer systems, administrative actions, crimes and penalties related to the local environmental system.

As you can see, this is a very important law for the country. The president has ordered the creation of a multisectorial and multiparty commission that will be in charge of drafting the regulations and of implementing this law. [end recording]

BANGLADESH

Serious Flaws in Antipollution Plan Implementation Noted

90WD0684A Dhaka *THE BANGLADESH OBSERVER*
in English 24 Jul 90 pp 1, 10

[Text] A large number of anti-pollution projects taken up by the Department of Environment have not been properly implemented. Since its inception in 1985, the department was moving at a snail's pace in fighting pollution hazards in the country.

Within a span of few years, there has been large-scale cutting of trees in Dhaka city with an apparent bid to widen the paved roads. The roads have been widened at many points sacrificing many old trees, but there has been serious ecological imbalance in the city, said some environmentalists. The long-term programmes for planting more saplings in the city has failed. On the centers of main thoroughfares, small islands have replaced many long eye-catching trees. The authorities have little excuse in explaining adequately about the indiscriminate cutting of trees, in many posh areas of the city.

The city traffic witnessed a day-to-day rehearsal of emitting black smokes by the running buses trucks and other transports. The city dwellers have to live with frequent blaring of horns by the ever increasing transports. The chimneys in the industrial belt continue to emit black fumes violating laws of the land. Nobody seems to take interests excepting constitution of stringent regulations by the Department of Environment.

Once the scenic and panoramic lakes are gradually being turned into the places of dumping of sewerage disposal. Lakes connecting Khilgaon and Ahmedbagh of Kamalapur area offers a pitiable look as the water bodies have turned blackish and polluted with sewerage connections being randomly given to them by the WASA contractors much to knowledge of the protectors of the laws. None seems to be concerned.

Industrial wastes are being thrown into the rivers Buriganga, Surma, Rupsa, Sitalakhaya and Meghan, resulting in serious pollution hazards. The fish resources are dwindling fast and the contaminated water of the rivers has been threatening health of the people living on the banks. The Environment Pollution Act, 1986 suggested maintenance of waste treatment plant in all the industries to save the environment from severe pollution. Out of estimated total of 6000 industrial units throughout the country, more than 2000 polluting industrial units have been identified so far. Other industries are being checked whether they have their own waste treatment plants. Observers believe most of these industries do not have such plants. The department has not intensified its move to take stern action against the violating industrial units.

To maintain a check-and-balance in city's environment, the government decided to shift the existing tanneries

from Hazaribagh in the city to Kanchpur near Demra. The tanneries, numbering about 200, are yet to be shifted. The city dwellers in and around Hazaribagh have long been suffering from chronic diseases as resultant effects of pollution arising out of bad odor of the raw hides and skins and their processing.

The short-term programmes of the Department of Pollution included carrying out a study on the environmental impact on Dhaka flood control embankment, a survey of the plan to check pollution of the river Buriganga and other rivers passing through the industrial zones. The plan suggested keeping industrial estates away from the residential areas, intensifying afforestation, safe disposal of urban, industrial and household wastes and encouraging the people to use surface water in place of underground water. For unknown reasons, the studies are being delayed.

The department has also miserably failed to stop large-scale sinking of deep-tubewells, especially in the northern districts, to keep up in the ecosystem in the country and avoid imbalance. Sinking of the deep tubewells continue unabated with little respect for the law of the land.

INDIA

Government Plans Bill To Combat Noise Pollution

90WD0656A Bombay *THE TIMES ON INDIA*
in English 9 Aug 90 p 5

[Article by Nandini Kapadia]

[Text] The Central government is planning to formulate a bill on noise pollution to combat the menace of noise in the country, especially the four metropolitan centres.

Though comprehensive laws have been enacted for air and water pollution, no legislation has been passed for noise.

The Maharashtra minister of state for environment, Mr. Arun Mehta, when contacted promised that he would move a bill in the assembly if the Centre took too long in doing so.

The minister had announced in the assembly on 13 July, after a debate on a non-official bill on noise pollution moved by the leader of the opposition, Mr. Manohar Joshi, that a committee of experts would be set up to draft a bill.

A survey by the All India Institute of Medical Sciences, Delhi, a few years ago had shown that the average noise level of the metropolitan cities in India was more than twice the prescribed international limits.

The noise levels in cities were found to be anything between 85 to 95 decibels (dB) far above the prescribed World Health Organisation (WHO) limit of 45 dB.

Western scientists have said in the 21st century noise will be the greatest killer and number one cause of diseases, especially in developing countries.

JORDAN

Aspects of Water Problem Discussed

Increased Consumption Reported

90AE0196A Amman AL-RA'Y in Arabic
14 Jul 90 pp 1, 28

[Article by Miryam Shahin]

[Text] Mr. Mu'tazz al-Bilbisi, secretary general of the Ministry of Water and Irrigation, said that the current drinking water deficit from which the central and northern regions of the kingdom are suffering can be countered and reduced by following methods of rationing, proper usage, and repairing leaks in the water networks.

Mr. al-Bilbisi explained in an interview with AL-RA'Y and the JORDAN TIMES that it would be possible to overcome the severe deficit that we face for the second year in a row with the cooperation and reasonable participation of every citizen.

He added that the authorized agencies were working around the clock to repair leaks in the water networks.

He stated that leakage represents one of the issues that demands attention.

He said that at a time when demand for water is increasing by 10 percent a year, new sources are not being discovered to replenish the water reserves in the kingdom. Most of the water available in the surface ground layers has been exploited, and studies are being done now on exploiting the water in the lower layers.

Among the regions under study are al-Sirhan, al-Disi, and al-Azraq, since the water in these regions goes down to a depth of 1000 meters.

The Amanah Amman region needs 12,000 cubic meters of water to cover its needs through the summer months, whereas we only have available to us 9,000 cubic meters.

Mr. al-Bilbisi said that Jordan consumed 175 million cubic meters of drinking water in 1989.

He proceeded to say that in the other regions of the kingdom in the south and center, citizens do not suffer from a scarcity of water of the same severity; nevertheless the situation requires that the consumption of drinking water be rationed.

Solutions to Problem Proposed

90AE0196B Amman AL-RA'Y in Arabic 16 Jul 90 p 3

[Text] The underground water studies section in the Ministry of Water and Irrigation has drawn up a number of proposals for solving the water problem in Jordan.

The proposals included:

First: Protecting the pressurized artesian strata from loss by digging a limited number of wells for the purpose of well-studied direct utilization and not for the purpose of exploration or experimentation, and installing shut-off valves or building cement chambers to prevent the well water from leaking out.

Second: Preparing precise estimates of the available water reserves that could be utilized for all the water basins, and not exceeding the upper limit of the amount pumped proportional to annual replenishment so as to prevent the encroachment of salt water.

Third: Protecting the ancient, non-renewable, strata of underground water, and not depleting them with unproductive agriculture in the desert regions.

Fourth: Making precise measurements and estimates of the amount of surface water available in the valleys and plains, recording them in regular, precise records, and issuing annual technical publications on that.

Fifth: Making precise comprehensive, and periodic chemical and vital analyses of any water source before utilizing it for drinking. For greater precision it would be preferable to have the analysis done by more than one laboratory.

Sixth: Advising factories and gas stations to transport their residues to desert locations far from sources of water, after they have been purified with special compounds.

Seventh: Placing the main drinking water reservoirs under the oversight of qualified chemists who would keep an eye on them and do constant chemical analysis.

Eighth: Achieving a stable and long term water balance, and preparing a water yearbook for Jordan in order to regulate the utilization of water sources.

Ninth: Setting up well-defined water programs for exploiting the underground water connected with private wells, and installing special meters to limit the amount that may be pumped daily.

Tenth: Ensuring the effectiveness of purification stations, and transporting their entire production by pumping it through special pipes to the eastern desert regions of the kingdom, and establishing artificial desert lakes of the purified water to be used for desert forestation and treating desertification.

Eleventh: Not digging deep wells in the regions close to the Dead Sea so as to eliminate salt water, and limiting the number of wells in those regions.

Twelfth: Giving a qualified department the task of studying and planning sources of water, and giving those who are qualified and competent in the field of water the opportunity to participate in laying down a water policy for the kingdom, and relying on open, collective decisions for dialogue and scientific research before carrying out the projects.

Thirteenth: Making a precise study of circumstances before implementing them, and carrying them out in stages according to the funds available for that. Thus, a pipeline project in some city would be implemented partially, in one area and then another, with the amount that would cover that, but avoiding digging up the streets of the entire city then waiting for the arrival of the allocated assistance.

Fourteenth: Programming the computer to make an exception of any value of a private home water bill which is several times more than the 2-year average of the previous cycles, and to take the calculated average of the value of these cycles and enter the exceptional value into a special list so that it might be followed up on and its causes determined, of course.

Fifteenth: Choosing safe locations for garbage dumps so as to be far from wells and water sources, and forming a committee specializing in and qualified for that.

Proposing these solutions and recommendations will help in taking scientific measures to protect our sources of water and in following a well-studied policy for successful management and regulated utilization of water sources, God willing.

ERRATUM: State Environmental Protection Construction Funding Statistics

[In JPRS-TEN-90-011 of 31 August 1990, the article: "State Environmental Protection Construction Funding Statistics," beginning on page 45, contained errors in the tables and is being republished as follows:

State Environmental Protection Construction Funding Statistics

90WN0173A Moscow VESTNIK STATISTIKI
in Russian No 6, Jun 90 pp 39-43

["1989 Environmental Protection Construction Projects"]

[Text] In 1989 3.8 billion rubles in state capital investments were directed toward environmental protection and rational use of natural resources, which is 21 percent more than in 1988; 3.3 billion rubles were actually used, or 4.0 percent more. Capital investments for environmental protection construction amounted to less than 2.0 percent of the total volume of investments in the national economy. In the United States this proportion is nearly 1.5 times greater.

In 1989, as in years past, ministries, departments, and union republic Councils of Ministers did not devote proper attention to environmental protection construction, although the ecological situation in a number of regions remains extremely tense. Failure to carry out tasks for erection of environmental protection projects and increasingly severe reaction of public opinion to shortcomings in protecting the environment have led to a situation in which, in a number of regions in the country, the operation of over 1,000 enterprises and individual factories was halted by decision of local authorities.

Capital investments allocated for the year were only 86 percent utilized. Of the total volume of capital investments assimilated for environmental protection purposes, 1.1 billion rubles, or a third, consisted of the enterprises' and organizations' own assets; moreover, these assets were utilized at a lower level (82 percent) than the centralized funds (88 percent).

The state order for putting the most important environmental protection projects into operation in 1989 was spoiled: out of 150 projects, only 74 were put into operation.

Two point two billion rubles in state capital investments were used for protection and rational use of water resources, or 85 percent of the ceiling.

With the significant increase in the volume of contaminated waste water dumped into the nation's water reservoirs each year, the task for putting into operation facilities for treating effluent was only half-fulfilled. Facilities capable of treating 4,352 cubic meters of water per day were put into operation, which is 16 percent less

than in 1988. Introduction of highly-efficient inter-branch common-system installations for waste water purification using valuable components and sediment deposition was not introduced at USSR Minmetallurgiya's Chiaturmarganets Metallurgical Combine, at the USSR Minkhimnefteprom's [Ministry of Chemical and Oil Engineering] plastics plant in Nizhniy Tagil, and also USSR Minugleprom's [Ministry of the Coal Industry] plants at Prokopevsk and Mezhdurechensk in Kemerovo Oblast; and at the housing and municipal services facilities of the cities of Kostroma, Magadan, Ivano-Frankovsk and Ashkhabad. The aforementioned projects are situated on the whole in regions where the pollution of water resources with toxic substances significantly exceeds the allowable sanitary norms.

Putting into operation water-recycling systems, which provide for economizing on fresh water and reducing the discharge of polluted wastes, increased in comparison with 1988. At the same time, the annual task for introducing these systems has been carried out by only 52 percent. Systems such as this, with a 24-hour capacity of 14.8 million cubic meters, were not put into operation. USSR Minenergo failed to introduce a 5.3-million cubic meters-per-day water-recycling system, and USSR Minatomenergoprom, whose enterprises are the primary water-users in industry, failed to introduce a 7.3-million cubic-meters-per-day system. The task to introduce a conservation-intensive (closed) water supply system at Mosenergo's TETS-8, Tyumen's TETS-2, Tbilisi's GRES, and Rostov's AES, was frustrated.

In 1989, 404 million rubles in capital investments were utilized for construction projects to ensure the protection of the atmosphere, the annual ceiling for which was 76 percent assimilated. Installations were put into operation for regulating and removing harmful substances from exhaust gases expelled at a rate of 31.2 million cubic meters of gas per hour, or 56 percent of the annual task. At the same time discharge of harmful elements into the air from stationary sources is still great, although it has declined somewhat in comparison with the preceding year.

Of the overall discharge of harmful elements, the greater proportion falls to enterprises of the USSR Minenergo [Ministry of Power Engineering] (25 percent), Minmetallurgiya (26 percent) and Minkhimnefteprom (7 percent). At the same time USSR Minenergo did not ensure putting into operation gas-treatment installations capable of treating 8.6 million cubic meters of gas per hour (57 percent of the task), USSR Minmetallurgiya—3.5 million cubic meters of gas per hour (28 percent), and USSR Minkhimnefteprom—0.6 million cubic meters of gas per hour (31 percent). These ministries frustrated the plan for introducing such installations at enterprises in a number of cities, where an especially high level of air pollution is noted: at Krasnoyarsk TETs-3 and Irkutsk TETs-7, at the Donetsk Metallurgical Plant, at the Severodonetsk Stekloplastik Production Association, at the regional boiler works in Bratsk, and at the Magnitogorsk Metallurgical Combine.

In 1989 140 million rubles in state capital investments (86 percent of the ceiling) was spent for preservation and rational use of mineral resources. Of the 10 structures and installations planned for comprehensive use of mineral resources, only 4 were put into operation. Because of the insufficient support by such installations, significant losses of valuable minerals continue during the refinement process, and valuable by-products are lost during the extraction and refinement of gases. The total amount of minerals lost during the extraction and refinement process amounts to about 7 billion rubles. Every year up to 20-25 percent of petroleum gas by-products are burned up, the loss of which is valued at 70-100 million rubles.

Fifty-two million rubles in capital investments (83 percent of the task) were utilized for measures to preserve forest resources and fish reserves.

The situation with respect to measures taken for preservation and rational use of the land is somewhat better. For these ends, 441 million rubles in capital investments, or 104 percent of the ceiling, were assimilated. Of this amount, 229 million rubles, or 100.7 percent, were spent for construction of anti-erosion hydraulic engineering, flood-control, anti-landslide and other installations (including bank-shorings). By virtue of state capital investments, protective forest strips were established on 31,100 hectares (93 percent of the task), and work carried out on terracing steep slopes encompassing 800 hectares (96 percent).

The situation that took shape in 1989 with respect to use of capital investments allocated for environmental protection purposes and for putting into operation environmental protection projects requires fundamental changes in attitude toward such construction by the ministries, departments and councils of ministers of the union republic, in order to significantly improve the ecological situation in the country.

**State Capital Investments for Environmental Protection and Rational Use of Natural Resources for 1989.
(Millions of Rubles)**

Capital Investments—in all	Including for Protection and Rational Use		Water Resources		Atmospheric Air		Land		Mineral Resources	
	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used
USSR Total	3255	86	2166	85	404	76	441	104	140	86
<i>Fuel-Energy Complex</i>	597	93	328	92	103	83	97	123	53	85
USSR Minenergo	123	94	95	95	19	82	1	196	-	-
USSR Minatomenergoprom	87	109	84	108	2	97	0.3	172	-	-
USSR Minneftegazprom	159	101	57	93	33	86	69	118	-	-
"Gazprom" Concern	166	86	39	79	49	81	24	142	46	81
USSR Minugleprom	48	80	39	75	-	-	2	99	7	117
USSR Minneftegazstroy	14	85	14	86	-	-	0.5	75	-	-
<i>Metallurgical Complex</i>	403	86	220	89	115	78	6	102	59	94
USSR Minmetallurgiya	360	83	181	111	77	6	105	59	94	
"Norilskiy Nikel" Concern	43	133	39	135	4	116	0.0	2	-	-
<i>Machine-Building Complex</i>	109	77	93	13	78	2	192	-	-	
USSR Mintyazhmash	26	74	21	72	5	78	0.4	100	-	-
USSR Minelektrotekhnicheskii pribor	21	82	19	83	1	53	0.1	89	-	-

State Capital Investments for Environmental Protection and Rational Use of Natural Resources for 1989.
(Millions of Rubles) (Continued)

Capital Invest- ments—in all	Including for Protec- tion and Rational Use		Water Resources		Atmospheric Air		Land		Mineral Resources	
	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used	Used	Percent of Ceiling Used
USSR Min- stankoprom	6	68	5	65	1	92	0.01	100	-	-
USSR Minav- toselkhozmash	54	78	46	76	6	92	2	103	-	-
Chemical-For- estry Complex	522	75	317	78	132	68	19	91	24	78
USSR Minkhimnefte- prom	181	68	112	72	56	58	4	73	8	108
"Agrokhim" Association	178	86	93	91	37	71	14	102	14	72
USSR Minmedprom	43	75	36	72	7	93	0.3	79	-	-
USSR Minle- sprox	112	74	70	74	32	85	1	65	-	-
"Tekhnokhim" MGO	8	88	6	116	-	-	-	-	2	54
Union Republic Councils of Ministers: RSFSR	504	85	374	82	6	79	110	97	-	-
Ukrainian SSR	233	93	141	91	2	78	81	102	-	-
Belorussian SSR	30	88	25	87	2	74	3	109	-	-
Uzbek SSR	59	94	34	79	0.4	76	22	136	-	-
Kazakh SSR	85	126	78	130	0.4	75	3	91	-	-
Georgian SSR	40	95	16	91	-	-	12	98	-	-
Azerbaijan SSR	20	64	15	66	0.3	66	5	60	-	-
Lithuanian SSR	36	91	34	90	0.1	100	2	-	-	-
Moldavian SSR	42	74	18	65	0.1	17	23	93	-	-
Latvian SSR	30	92	30	92	-	-	0.02	107	-	-
Kirghiz SSR	10	77	7	69	-	-	3	106	-	-
Tajik SSR	21	89	5	51	-	-	15	119	-	-
Armenian SSR	11	49	11	53	-	-	-	-	-	-
Turkmen SSR	7	75	5	71	0.1	53	2	101	-	-
Estonian SSR	23	87	22	90	0.4	43	1	65	-	-

Environmental Protection Projects Put Into Operation Through State Capital Investments in 1989

	Works for Effluent Treatment, thous. met. ³ per Day		Water Supply Recycling Systems, thous. met. ³ per Day		Installations for Trapping and Neutralizing Harmful Elements from Gas Discharges, thous. met. ³ of gas per hour	
	Introduced	Percent of Plan Fulfilled	Introduced	Percent of Plan Fulfilled	Introduced	Percent of Plan Fulfilled
USSR as a Whole	4352	50	15897	52	31222	56
<i>Fuel-Energy Complex</i>	398	47	10736	46	7865	33
USSR Minenergo	108	52	1519	22	6529	43
USSR Minatomenergoprom	28	26	9189	56	1209	15
USSR Minneftegazprom	120	49	8	19	63	100
"Gazprom" Concern	38	104	15	-	64	100
USSR Minuglegazprom	102	40	5	59	-	-
<i>Metallurgical Complex/USSR Minmetallurgiya</i>	856	92	795	42	9089	72
<i>Machine-building Complex</i>	324	33	441	84	3994	66
USSR Mintyazhmash	119	72	101	100	2237	67
USSR Minelektrotekhpribor	38	48	299	96	8	6
USSR Minstankoprom	42	65	0.2	2	471	50
USSR Minavtostelkhozmash	125	19	33	35	1278	81
<i>Chemical-Forstry Complex</i>	408	56	2670	79	2584	62
USSR Minkhimnefteprom	125	54	238	37	1336	69
Agrokhim Association	186	72	1805	74	423	95
USSR Minmedprom	22	21	415	91	817	73
USSR Minlesprom	75	55	212	81	8	1
Union Republic Councils of Ministers:						
RSFSR	773	48	19	892	49	
Ukrainian SSR	404	71	20	111	825	82
Belorussian SSR	25	70	16	100	443	72
Uzbek SSR	93	94	600	100	10	97
Kazakh SSR	305	62	3	100	-	-
Georgian SSR	0.8	2	-	0	-	-
Azerbaijan SSR	0.1	0.02	-	-	-	-
Lithuanian SSR	18	100	0.4	47	83	100
Moldavian SSR	24	40	0.3	1	-	-
Latvian SSR	9	42	0.3	31	-	-

Environmental Protection Projects Put Into Operation Through State Capital Investments in 1989 (Continued)

	Works for Effluent Treatment, thous. met. ³ per Day		Water Supply Recycling Systems, thous. met. ³ per Day		Installations for Trapping and Neutralizing Harmful Elements from Gas Discharges, thous. met. ³ of gas per hour	
	Introduced	Percent of Plan Fulfilled	Introduced	Percent of Plan Fulfilled	Introduced	Percent of Plan Fulfilled
Kirghiz SSR	0.4	0.3	-	0	-	-
Tajik SSR	4	18	-	0	-	-
Armenian SSR	89	79	-	-	-	-
Turkmen SSR	-	0	-	-	-	-
Estonian SSR	2	2	-	-	-	0

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Findings of White Sea Ecological Disaster Commission Reported

90WN0248B Moscow PRAVDA in Russian 10 Aug 90
Second Edition p 6

[Article by Professor A. Alimov, doctor of biological sciences and chairman of the interdepartmental commission, and Professor V. Khlebovich, doctor of biological sciences and member of the commission: "Just What Happened on the White Sea?"]

[Text] In early May a large number of dead or dying starfish, crabs, and various other marine dwellers were found cast by a storm onto the Letny Coast in the Dvinskaya Bay of the White Sea. From 10 through 31 May three such incidents were seen. In all during this time about 6 million dead starfish, 7,500 crabs, and approximately 9,000 mussels were counted on the coastal strip 60 kilometers long.

We must say that storms frequently cast up dead animals, and at times in large numbers. But the uniqueness of what happened this year was the unprecedentedly large scale.

The first discoveries and preliminary results of analyses did not permit an answer to the question of the causes of the animals' deaths. As per the instructions of the USSR Council of Ministers and the USSR Academy of Sciences, an interdepartmental commission was organized. Scientists of the USSR Academy of Sciences, the USSR Ministry of Health, the USSR Ministry of Defense, the USSR State Committee for Hydrometeorology, the USSR Ministry of the Fish Industry, representatives of the USSR State Environmental Protection Committee, the Navy, the USSR Council of Ministers, the USSR Ministry of Maritime Fleet Northern Shipping Company, and the Arkhangelsk Oblispolkom, as well as experts from a number of scientific institutes, were members of this commission.

All the hypotheses proposed were carefully analyzed. Hypotheses about defreshening of the water and the impact of waste water from Arkhangelsk and Severodvinsk were not confirmed (in that case the main impact should have been directed at the Zimniy Coast of the

bay); virus and algal hypotheses, the impact of radioactive contamination (the radiation background of the region is within the norm), the impact of heavy metal salts, acoustic influences, and others were rejected. Let us dwell specially on examining only those hypotheses which were most actively promoted in the mass information media.

In fact, on 7 December 1989 several tons of missile fuel oxidizer (nitric acid) were discharged into the sea as a result of an accident on a submarine 105 kilometers from shore. Let us note that the depth at the site of the accident was over 100 meters. Taking that into account and the distance to the Letny Coast, as well as the almost half year that had passed, it is impossible to tie the animals' deaths to the results of the accident. Nor could the falling of a missile with residual fuel into the bay at a depth of 200 meters in April 1990 be the cause, nor could the fall of a second missile which happened almost a month after the first sign of the death of marine animals.

A great deal of attention was devoted to examining the hypothesis of the possibility that the animals were poisoned by combat toxic agents. The appearance of this hypothesis was a result of the fact that it was precisely during the time of the mass death of the animals that the Arkhangelsk Fish Combine held civil defense training and decided to inspect the fish caught near the Letny Coast for possible mustard gas content. Surprisingly, almost all the fish and starfish had a positive reaction to sulfurous mustard gas. Unfortunately, this version reached the newspapers right off without additional verification. A second test for the content of these compounds in fish showed a negative reaction.

After careful analysis of the data obtained, the commission came to the conclusion that the death of the marine animals occurred because of the short-term but powerful impact of toxic substances containing sulfurous or sulfurorganic compounds. They could be petroleum products with a large amount of sulfur, for example. They could have fallen into the sea as a result of flushing out

tanks or other reservoirs installed in ships, for example. However, inasmuch as it was impossible to ascertain either the substance itself or its source, what was said should be taken as the most plausible hypothesis.

In late June biocenosis data in the area of the animals' deaths were already normal. It would be appropriate to evaluate the scope of what happened. According to rough estimates, there are about 100 million to 4 billion starfish within the boundaries of the Letniy Coast section where the death of the animals was observed. The number of starfish cast onto shore was no more than 1 percent of the total number.

The commission was unable to ascertain the nature or source of the toxic substances whose action resulted in the death of the animals—a fairly long time had passed since the event had occurred. Because of that, monitoring, above all in the Letniy Coast zone, becomes especially important.

The situation which is developing in the White Sea cannot be considered at all satisfactory. Many of its sections are under strong pressure from economic activity. This is especially true of the Dvinskaya Bay, which receives untreated or poorly treated waste water from the enterprises of Arkhangelsk and Severodvinsk. It should be taken into account that the White Sea is a very unique body of water with a distinctive layering of its waters, which hardly mix at all with one another—heavy, cold, arctic Barents Sea waters with high salt content and more freshened White Sea water proper. The sea is characterized by a relatively small water volume and circulating currents in its bays. All this helps it become a unique kind of sedimentation pond for pollutants entering it.

The results of the commission's work clearly showed the pressing need to create a special subdivision in the country to efficiently recruit the appropriate scientific forces to react rapidly to ecological disasters. It should be equipped with the most modern analytical, measuring, and other instruments and equipment and be mobile. It can be formed, for example, under the USSR State Environmental Protection Committee, where all the information related to environmental protection in particular regions should be accumulated.

The efficient and high-quality work of the Arkhangelsk Oblast Environmental Protection Committee must be mentioned. The military did not put any obstacles in the way of seeking the causes of what happened; on the contrary, they helped energetically in the work.

But can such a phenomenon happen again? Unfortunately, we cannot give a negative answer to that question. The ecological situation in the White Sea, especially in the vicinity of industrial cities, is very strained, and monitoring the activities of various organizations, enterprises, ships, and the like is difficult, especially when the monitoring organs are still in the formative stage. So any kind of surprise is possible. But they can be reduced to a minimum, if each resident of the White Sea region

considers it his own home and treats the beneficent sea like his own home, and with great respect.

State Environmental Expenditures Summarized

*90WN0256A Moscow EKONOMIKA I ZHIZN
in Russian No 31, Jul 90 p 14*

[Response to a letter by N. Artemov: "More Money, Lower Returns"]

[Text] "Can you say how much is allocated for environmental protection and how it is used?"

N. Artemov, Arkhangelsk

For water resources an average of 1,617,000,000 rubles was invested each year during the past five-year plan; for the current five-year plan the figure is 1,989,000,000 rubles. Additional money went to protect the atmosphere—here the growth was from 180 to 314 million rubles. However, the return from these increasing amounts has not improved, but has declined.

Thus, the average annual indicator for the introduction of waste water treatment facilities remains at the level of the past five-year plan—capacity for 5.4 million cubic meters daily. Fewer water recycling systems were introduced than during the past five-year plan—their capacity totaled 21.5 million cubic meters daily, compared to 24.4 million for the previous five-year plan. There was also a decline in the average annual introduction of facilities for removing and processing pollutants from exhaust gases—from a capacity for 40 million cubic meters of gas per hour it declined to 36 million.

This is not surprising. During 1986-1989 the targets for installing waste water treatment facilities were only 50-69 percent fulfilled; those for water recycling facilities—52-84 percent fulfilled; and for removing and processing air pollutants—56-81 percent.

State Capital Investments For Environmental Protection and Rational Use of Natural Resources (in comparable prices; millions of rubles)

	Annual Average		
	1976-1980	1981-1985	1986-1989
Total	2,165	2,224	2,914
Including			
For the protection and rational use of water resources	1,668	1,617	1,989
For the protection of the atmosphere	190	180	314

Introduction of Capacity for Air and Water Pollution Control

	Annual Average		
	1976-1980	1981-1985	1986-1989
Waste water treatment facilities, millions of m ³ per day	7.4	5.4	5.4
Water recycling systems, millions of m ³ per day	24.3	24.4	21.5
Facilities for removing and processing pollutants from exhaust gases millions of m ³ of gas per hour	34.5	40.0	36.0

Academician Aganbegyan Sees Economic Answer to Pollution

*PM1209152190 Moscow PRAVDA in Russian
11 Sep 90 First Edition p 2*

[Interview with Academician Abel Aganbegyan conducted by N. Ilinskaya: "The Environment and the Market"—first paragraph is editorial introduction; time and place not indicated]

[Text] The opening of the joint Soviet-American conference on problems of the environment and the economy coincided with the summit meeting between the leaders of those two countries. This "overlapping," as it were, gave a fresh fillip to discussion of the problems. The participants in the meeting were united in the view that environmental protection is today becoming a problem for all mankind. That is why the scientists were so greatly concerned by the state of affairs in our country, particularly in connection with the switch to market relations. Abel Aganbegyan, chairman of the organizing committee of the Soviet-American conference and rector of the Academy of the National Economy, here considers the need to restructure our environmental management economics under the new management conditions.

[Ilinskaya] Abel Gezevich, the environmental situation is getting worse all the time. Many people are fearful that with the switch to a market economy the environment will simply be plundered.

[Aganbegyan] The problems of the environment are closely linked to questions of the economy, law, and politics. To regard them separately, as environmental movements sometimes do, is pointless.

We are indeed switching to a market economy. This will also radically alter the system of environmental management in the USSR. Economic levers and incentives, resource-saving, and the reduction of the scale of environmental pollution must come to the fore. In short, we must now learn how to manage the environment under new economic, legal, and political conditions.

[Ilinskaya] But if you are going to produce an effective cure, you must at least give an accurate diagnosis.

[Aganbegyan] The diagnosis has been given. Its roots stem from the extensive development of our economy, which existed basically by extracting additional raw resources. In so doing the whole of the economy turned its back on people. Production outlay grew twice as quickly as expenditure for social purposes.

Under such conditions it is not surprising that in terms of the scale of interference in the environment and the extraction of its various components we attained top world ranking. It is estimated that 15 billion cubic meters of soil are excavated in the USSR each year, from which 5 billion tonnes of useful substances are extracted. Each year around 2 million hectares of forest are felled and 64 million hectares of soil are exposed to erosion.

Our country is the leader in the extraction of many primary natural resources—oil, natural gas, and iron ore. We extract more salt, phosphates, many kinds of nonferrous metals, sand, crushed rock, and lime than anyone else in the world. We are virtually on a par with the United States and China in terms of coal extracted while outstripping them in the actual mass of rock extracted in the coal industry. We are also almost on a par with the United States in lumber procurement.

But while extracting astronomical quantities of minerals, we utilize them two to four times less well than other countries. In particular, in terms of steel smelting the USSR outstrips the United States more than twofold but is only half as good in gross output terms. In other words, we consume four times as much steel as the United States per unit of finished product.

The reverse side of the wasteful use of natural resources is growing environmental pollution. The lack of comprehensive and full extraction of products leads to the need for raw materials to be mined on an unnecessarily vast scale. Huge amounts of waste material are generated here. Wasteful consumption of fuel and raw materials is also related to the generation of waste products and the discharge of harmful substances into the water, the atmosphere, and the soil.

For example, our internal combustion engines use 20-50 percent more liquid fuel than those produced in Western countries, and that means additional atmospheric pollution. When you also consider that our vehicles are not fitted with catalytic converters, it becomes clear that this pollution doubles, as it were.

Paradoxical as it may seem, our wastefulness is generated by the wealth of our natural resources and their relative cheapness. This problem of cheapness is compounded by the low domestic prices for raw materials and fuel, which are two to three times below world prices. The great expanses of our country and the dispersion of the centers for extracting and processing fuel and raw resources reduced the attention paid to constructing

purification facilities. We basically counted on the self-cleansing potential of nature itself.

[Ilinskaya] Are we capable of reversing these threatening trends, and how?

[Aganbegyan] First and foremost, a new structural policy is needed. The crux here lies in radically altering the correlation between extracting and processing sectors in favor of the latter.

The accelerated development of machine building and information technology as catalysts for scientific and technical development forms the basis of the new structural policy of perestroika. In the last five years capital investment in machine building has doubled, against increases of 24 percent in previous years. In so doing a shift was made toward retooling and product renewal.

The development strategy is to start the mass production of a new generation of equipment. And to carry out on the basis of that equipment the retooling of all the other sectors of the national economy. The proportion of products designed to utilize waste products and recover harmful discharges among equipment and instruments manufactured is sharply increasing.

Growth in oil extraction is virtually over in the USSR, and it has begun to be reduced. The same situation obtains with the extraction of coal, iron ore, a number of nonferrous metals, raw materials for construction, and timber procurement.

Moreover, we are starting to develop fields with more difficult conditions, including fields which pose a danger to the environment. A typical example is the Caspian oil and gas field. It contains a large quantity of hydrogen sulfide. This requires a doubling and tripling of efforts to organize waste-free production, ensure safety, and avert the risk of environmental pollution.

[Ilinskaya] Could you give an environmental forecast of our future? What is in store?

[Aganbegyan] A marked improvement in the switch from administrative management to economic management methods will start next year. The reform of prices and pricing marks the main step in that direction. The results of these reforms can substantially influence the solution of environmental management problems. Wholesale prices for raw materials and fuel have been reduced too sharply relative to other prices and are two to two and a half times below corresponding world prices. Low fuel oil prices, for example, do not encourage its economical use. The USSR burns around 170 million tonnes of fuel oil whereas the United States uses around 50 million tonnes. One of the tasks of the reform of wholesale prices is to bridge the gap between our domestic prices and world prices. This presupposes a doubling of prices for raw materials and fuel resources and the incorporation in them of the real magnitude of differential cost. The introduction of payment for land,

water, and forest and mineral resources will also serve as an incentive to make fuller use of them.

Payment for environmental pollution constitutes another group of economic normatives affecting environmental management. The new tax system could also act as an incentive in this respect. It envisages exempting from taxation that part of enterprises' profit which is channeled into environmental protection.

In implementing the new budgetary policy we recommend that the government make the financing of major environmental protection measures a priority. Foreign purchases of equipment and instruments intended for environmental protection could also be exempted from customs duty. Customs policy will then be aimed at solving acute problems in the people's interests.

The conditions under which enterprises to blame for accidental pollution of the environment would pay full compensation for damage must also be elaborated. Competent public monitoring and complete glasnost in everything affecting environmental management will create definite safeguards for the successful improvement of the environmental situation. I repeat: Our environment is in such a critical state that any drop of evil added to this cup of bitterness is a crime.

New Soviet Peace Institute To Study Ecology Issues

AU1309152490 Moscow MIROVAYA EKONOMIKA I MEZHDUNARODNYYE OTNOSHENIYA in Russian No 8, Aug 90 pp 120-123

[MEMO interview with Professor Aleksandr Konstantinovich Kislov, doctor of historical sciences, director of the USSR Academy of Sciences Peace Institute: "A New Institute in the System of the USSR Academy of Sciences"]

[Text] On 15 November 1988, the Presidium of the USSR Academy of Sciences adopted the resolution to "Transform the USSR Academy of Sciences Scientific Council for Research on Problems of Peace and Disarmament, the USSR Council of Ministers State Committee for Science and Technology (GKNT), and the Soviet Committee for the Defense of Peace into the USSR Academy of Sciences Peace Institute." In May 1990, Professor Aleksandr Konstantinovich Kislov, doctor of historical sciences was elected director of this institute. Our journal has requested him to answer a number of questions concerning the tasks facing the new institute.

[MEMO] Aleksandr Konstantinovich, what was the reason for transforming the Scientific Council for

Research into Problems of Peace and Disarmament into the Peace Institute (IMAN)? Why was it not possible, as before, to entrust the Scientific Council with the implementation of the same tasks relating to the organization of scientific endeavors on problems of peace and disarmament and also with the establishment of appropriate contacts with influential foreign scientific circles, particularly given the fact that, during the years of its activity, this council had acquired a certain prestige not only among Soviet but also international scientists?

[Kislov] There are several reasons why this was done. One can highlight the following: First, the somewhat amorphous structure of the Scientific Council itself could no longer meet the demands being made upon it by our rapidly changing times which present us with new problems literally every day; second, from the point of view of establishing contacts with influential foreign scientific and political circles, the form of an institute was considered to be preferable as it corresponded more to the practice of scientific research which has evolved in this sphere abroad where there are over 300 different institutes conducting research into the problems of peace; finally, it is also of significance that the Peace Institute is purely an academic establishment whereas many of our potential colleagues in the West viewed the Scientific Council as an organization connected with the Soviet Committee for the Defense of Peace and, hence, more as a propaganda than scientific body.

[MEMO] What will be the structure of this institute? Should it copy the usual structure of an academic institute with its permanent staff, be it large or small, and its fairly rigid system of departments and sectors, or should it assume the highly flexible organizational forms which predominate in foreign scientific-research centers?

[Kislov] It has been decided to base its structure on the second variant, as it is envisaged that IMAN will have a very small staff (approximately 15 people); the World Economics and International Relations Institute (IMEKO) will be entrusted with ensuring its scientific, organizational, and economic activities and the institute's research work will be conducted primarily on a contractual basis.

In this connection, it must be emphasized that this idea was far from being immediately and unanimously received. Thus, for example, it did not seem wholly comprehensible to certain scientific workers at the USSR GKNT why the USSR Academy of Sciences had requested such a small staff and for this reason (there were also others) the institute's legalization was delayed for a certain time. As a result, it was only on 26 December 1989 that comrade N.I. Ryzhkov signed the appropriate decree of the USSR Council of Ministers.

[MEMO] What criteria formed the basis for determining the immediate lines of activity of IMAN?

[Kislov] We are proceeding from the fact that, on account of its structure and, more specifically, its ability to attract a very wide range of specialists on a contractual

basis, the institute is able to organize and conduct extremely varied research for the elaboration of which it is enlisting the services not only of colleagues from IMEMO but also, when necessary, natural scientists and representatives of exact sciences.

In planning the institute's immediate lines of activity, we have tried, at the same time, to concentrate our attention, first and foremost, upon those acute and topical problems to which other institutes, primarily those in our department, have not yet been able to give due attention, for one reason or another, in spite of their great importance. In May 1989, the Presidium of the USSR Academy of Sciences adopted a resolution in which IMAN's immediate lines of activity were determined as the practical organization of research which is to be conducted in the following areas:

- the conversion of military production into civil production;
- problems of all-embracing international security, including its ecological aspects;
- analysis of ideological trends, public opinion and the alignment of sociopolitical forces on problems of peace and disarmament, and the role of social movements and political forces which are participating in the struggle for peace and their influence on the adoption of foreign-policy decisions.

Of course, even at the very first stage of its activity, IMAN will not limit itself solely to these lines of research. As it seems to us, the political regulation of regional conflicts and possibly other subjects should also occupy a prominent place in our research.

[MEMO] Could you not dwell in more detail on IMAN's immediate lines of activity which you have mentioned?

[Kislov] To begin with, let us look at conversion. I believe that the principle objects of research in this sphere are problems such as an assessment of world experience in this area which we should make use of in our own practice, and participation in the comprehensive scientific study of problems relating to the conversion of military production, first and foremost those connected with the mechanism of conversion. Evidently, of all these questions the following require the most detailed attention:

- the study of principles, forms, methods, and mathematical models (both on micro- and macro-levels) for converting the defense industry, taking into account the country's political, military, and national economic interests and proceeding from the planned reductions in the volume of output of armaments and military hardware and expenditure for conducting Scientific Research and Experimental Design Work;
- research into the mechanism of cutting back on military production, structural perestroika of military enterprises, and the remodeling of sectors of the defense industry in the interests of the national economy, including highly acute social aspects of this problem;

- the substantiation of what can be made able for conversion, and proposals for the effective utilization of construction and production capacities which are being released.

IMAN's research workers and the scientists whom we have attracted have already carried out specific work on this line of research. They have taken an active part in the preparation of a most important document—the State Program for the Conversion of the Defense Industry for the Period up to 1995—which is now in the final stages. The institute was one of the active founders of the Soviet National Commission for Assistance With Conversion with which the closest cooperation has now been established. Considerable attention is being given and will continue to be given to the problem of conversion in IMAN's publications, in particular, in its periodical publication "Paths Toward Security."

The accomplishment of the organization of IMAN will also enable us, de jure, to set about practically implementing one other commission of the Presidium of the USSR Academy of Sciences, namely, the creation of a laboratory incorporating different branches of science for the comprehensive scientific study of the problems of converting military production into civilian production and models which will enable us to guarantee the most effective implementation of such conversion.

[MEMO] As is well known, as early as the third special session of the UN General Assembly on disarmament, the Soviet delegation spoke in favor of holding an international meeting on conversion in the USSR in 1990. The preparations for holding the UN international conference on conversion in the USSR this year are now entering their final phase. The United Nations attaches great importance to this conference and considers it to be the most important forum of its kind to be held under the aegis of the United Nations in 1990. Will IMAN take part in this conference?

[Kislov] The success of the conference would make a serious contribution to international security and economic growth. It is precisely because of this that we are most actively participating in the preparation of this conference; apart from anything else, we feel that it will provide extensive opportunities for expanding existing contacts and establishing new ones with the most distinguished foreign scientists who are working in this sphere. IMAN has already established and is now expanding its ties with a number of corresponding American scientific centers (for example, the Council of Economic Priorities) with which it has reached agreement on a joint research program.

[MEMO] What are the prospects for studying problems of all-embracing international security?

[Kislov] In organizing research into these problems, we intend to give special emphasis at this stage to their ecological aspects since it is precisely the state of the environment which is beginning to represent a major threat to the future existence of man as a biological

species. Ecological security and the development of international cooperation on environmental protection are assuming ever increasing importance in the considerations of, first and foremost, the industrially developed countries of their global responsibility towards mankind as a whole. This problem is also assuming paramount importance in the context of the priority of universal human values in contemporary conditions.

In this line of research, IMAN together with the USSR Academy of Sciences IMEMO, is creating a mechanism of international cooperation with leading scientists from a number of countries—the United States, Canada, Sweden, Norway, and several others—by initiating a series of international scientific research projects.

The first of these was signed by us in April 1989 with the Woods Hole Oceanographic Institute and the Center for Maritime Policy (the United States) and received the name "Ecological Security and the World Ocean: Analytical Approaches and Joint Decisions." The problem of financing this project has been practically solved today. The Soviet Peace Fund (which, in principle, has agreed to allocate approximately 90,000 rubles for the implementation of the project in 1990-1991) and the American MacArthur Fund (which has already allocated \$309,000 for this purpose) have shown great interest in participating in the project as sponsors.

Within the framework of the project, it is planned to prepare joint monographic research and also, in its concluding phase, to elaborate recommendations for the governmental organizations of both countries on the development of cooperation in this sphere.

The second project—"Toward Stable Security: Economics, Ecology, and Ethics for the World Community"—was signed in November 1989 with the Transnational Fund for Research Into Problems of Peace and the Future (Sweden) and the Pacific Institute for Research Into Problems of Development, the Environment, and Security (the United States). It is planned to implement this project over three years. From the Soviet side, the organization, financing, and implementation of the project will be conducted jointly with IMEMO.

The principle aim of this project is to conduct research into the problems of interrelations between economic development and the natural and cultural environment as one of the imperative conditions for the future development of human civilization, and to elaborate ecological and ethical bases for international relations and an international legal conception of the biosphere. The project has practical-scientific significance and is oriented toward preparing a "package" of proposals and recommendations in the context of preparation for the UN Conference on the Environment and Development which is planned for 1992. During the implementation of the project, we plan to publish stage by stage materials dealing with separate aspects of the project. On completion of the work, these materials will be used in a monograph which, it is envisaged, will be published in

Russian, English, and Swedish. Furthermore, some of the materials will be specially prepared for the 1992 UN conference. At present, the project is being financed mainly by the Swedish through budgeted government funds, and charities.

It is further envisaged that Soviet specialists will take part in the important international conference "Ecological Security in the Modern World" which should initiate the regular exchange of ideas between leading scientists and specialists who are researching a number of social aspects of global ecological problems. Agreement has been reached on this with Laval University (Canada). According to the published program, representatives of the most important scientific centers in the United States, Canada, the West European countries, and the USSR will take part in the conference.

Other possibilities are being investigated with regard to the participation of Soviet scientists in joint international scientific research projects. In particular, in 1989, in its plan of propaganda and elucidation of the USSR's peaceful foreign policy initiatives in the foreign scientific milieu, IMAN supported the creation of the commission "The Murmansk Initiative" whose tasks include promoting the establishment in scientific and political circles in the Arctic countries of the desire for unified efforts aimed at reducing military tension in the Arctic, creating a climate of trust, and proclaiming the nonnuclear status of individual regions, subregions, and territories in the Arctic. Within the framework of this commission is the organization of a seminar and an international conference on politics in the Arctic and also the exchange of scientists who are researching problems of the Arctic. Provisional agreement has been reached on the participation in this commission of McGill University (Canada) and also the Dartmouth College Arctic Research Institute and the Dick Fund for International Understanding (the United States).

In speaking about IMAN's international connections, I would particularly like to mention those extensive and fruitful contacts which we have established with the International Peace Institute in Vienna which has been rejuvenated, so to speak.

[MEMO] What do you see as being the principle tasks of the institute in the area of analysis of public opinion and alignment of sociopolitical forces on problems of peace?

[Kislov] On the one hand, it seems expedient to organize and conduct serious analytical research in this area, and on the other hand, to concentrate on those problems which, previously, were not the focus of our attention. For example, we should examine the position taken by church circles on the most acute contemporary problems as they are currently assuming a more influential role. At the same time, in analyzing these problems, it is obvious that we should not limit ourselves solely to the situation existing in other countries but also examine new trends in the Soviet Union and the attitude of the Soviet public

to these problems. In this respect, of course, we will have to work in closer contact with different Soviet public organizations.

[MEMO] Our editorial board and editor wish you and the USSR IMAN success in your scientific endeavors and we have no doubt that the new institute will, in the near future, make itself known as an authoritative research center. We count on further fruitful cooperation with you.

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Scientist Urges Environmental Considerations in Nuclear Power Plant Siting

90WN0246A Moscow PRAVDA in Russian 30 Jul 90
Second Edition p 3

[Article by V. Osipov, corresponding member of the USSR Academy of Sciences: "Where Should the Nuclear Power Plant Be Put?"]

[Text] In November 1989 PRAVDA published a report about the change that was being made in the function of the Crimea Nuclear Power Station, which was under construction, to make it a training complex for preparing nuclear power plant operating and repair personnel. It seems that reason triumphed. But a number of questions arise. First, who will answer for the 600 million rubles spent to build the Crimea Nuclear Power Station, and will that money be even partially returned to the country? Second, how could it happen that the construction was begun in the Crimea of such a large facility representing an increased environmental hazard without sufficient scientific feasibility studies and, in particular, without a thorough assessment of the seismicity of the region in which the power plant was to be sited? Construction was based on a calculation of a seismicity of seven points on a 12-point scale, while the latest findings of seismologists rate the territory at nine points.

It is surprising and disturbing that the situation with the Crimea Nuclear Power Station is not an isolated case and obviously no matter of chance. At present the question of the Tatar and Rostov Nuclear Power Plants, which are under construction, has become urgent. In both cases the geological and environmental feasibility of the power stations' siting have been called into doubt. That same circumstance was one reason that the Armenian Nuclear Power Station was closed and construction halted on the Odessa Nuclear Heat and Power Station. One could go on citing such examples.

A traditional question occurs to anyone who is unfamiliar with such matters: How could such miscalculations, leading to unwarranted expenditures, have been made? There are many reasons here. We can examine several of them.

The first is the absence of proper geological and environmental feasibility studies supporting the selection of sites for the power plants. The decision of this matter was determined mainly by economic considerations: A nuclear power plant must be built where there is a shortage of electricity, i.e., closer to industrially developed regions and the energy consumers who are found in such regions. Within the boundaries of the regions that were thus determined, engineering and geological prospecting work was subsequently carried out to locate the precise construction sites. In that process, one condition for the choice of a site for a nuclear power plant was its proximity to a large natural or artificial body of water capable of serving as a cooling pond for the plant.

The second reason should be seen as practice, supported by unknown arguments (most likely, economics again), of building only above-ground nuclear power plants, and building them primarily on bases of sedimentary sandy and clayey rock. Alternative versions entailing underground or partially sunken nuclear power plants were not considered, even for regions with heightened seismic danger.

The next reason is hastiness in conducting prospecting and design work, which makes it impossible to conduct the full set of studies. One gets the impression that the departments carrying out the design and construction of nuclear power plants considered their most important task to be to begin building a power plant as quickly as possible and then to confront people with the fact that construction has begun and money spent. And when belated public protests arose, out came the familiar expression: "Who's going to permit you to throw away money already spent!"

In examining the reasons for the critical situation in the country's nuclear power engineering, one cannot fail to dwell on yet another one, one that may be the most important and the source of all the other miscalculations—it is our excessive confidence in the safety of nuclear power plants. The mistaken notion that nuclear power stations are no more dangerous than conventional stations that burn fossil fuel was elevated to the status of a national truth. It resulted in a situation in which nuclear power plants started to be sited practically in the suburbs of large cities. Thus, a whole series of plants, such as the Balakovo, the Gorkiy, the Zaporozye, the Voronezh, the Rostov and others were built or are being built at distances of less than 30 km from cities with populations of more than 100,000!

The Chernobyl accident brought to light many problems that had accumulated in nuclear power engineering. Since the disaster the discussion of them has gone far beyond the limits of professional debates and taken on an intense social resonance. Public protests sometimes assume the most extreme forms. Ideas about completely abandoning nuclear power engineering and replacing it with renewable forms of energy—solar, wind and geothermal energy, and hydroelectric power generated by tides and rivers—are being expressed with increasing

frequency. In this connection a whole series of arguments are advanced concerning the preferability of renewable energy to fuel-based energy, the chief of which arguments is the claim that these types of energy are absolutely clean environmentally. It is impossible not to agree that in the long run there really are no alternatives to renewable types of energy, if only because reserves of many types of fuel on earth are strictly limited. But it is also indisputable that the production of renewable types of energy cannot be considered competitive with traditional types of energy in the near future. Even if the most intensive research and engineering and design work were undertaken, it would take a certain time before existing ideas could be implemented on a broad industrial scale. Moreover, claims that the production of renewable types of energy is environmentally clean cannot be considered to be well founded. Hydroelectric power engineering is a vivid example. We know how many environmental problems are associated with its development. It is no accident that, along with the protests against the construction of nuclear power plants, a no less powerful wave of protests has been directed against the further development of hydroelectric power facilities.

In the existing situation, a correct and intelligent strategy is being proposed—the development of energy-saving technologies. But it will hardly suffice for carrying out plans for the country's socioeconomic development, if you consider the fact that we already lag behind the developed capitalist countries by nearly half in our per capita energy consumption. Consequently, in the next 30 to 50 years we will be forced to continue to use fuel-based forms of energy in order to keep from turning into an underdeveloped country.

It is necessary to agree with that conclusion, but with one qualification: The strategy for the safety of energy production must be radically changed. It should be based on the principle of the priority of the environmental safety over all other principles, including economic principles.

Do possibilities exist for improving safety in nuclear power engineering? Such possibilities unquestionably do exist, but realizing them requires a clear-cut and scientifically substantiated concept, a concept which should consist of a comprehensive system based on two main principles: physical and geological. The first principle includes the development of a new type of reactor, the safety of whose operation would be ensured independently of the human factor (mistakes in operating a nuclear power plant, sabotage, or poor-quality installation or construction), and the second includes ensuring the security of a nuclear power plant against natural disasters associated with seismicity, the tectonic movement of the earth's crust, subsidence, the settling of the earth's surface, etc.

I shall not dwell on the first principle of the concept. That is the physicists' prerogative. As a geologist, I would like to expound my ideas about ensuring the geological safety of nuclear power plants.

More specifically, it is necessary to correctly decide the question of where and how nuclear power plants must be built. In other words, we need a clear-cut system of ideas about the geological and environmental risk of building nuclear power plants, in the absence of which even super-reliable reactors will not provide a complete guarantee of safety. Within the framework of such ideas, feasibility studies must be conducted with regard to the siting of nuclear power plants, i.e., the regions must be determined that are the most favorable for building nuclear power plants in terms of their seismic, tectonic-structural, geomorphological, hydrogeological and other conditions. The magnitude of territories' seismicity and tectonic disruption, as assessed on the basis of general and detailed regional seismic studies, as well as a tectonic-structural analysis, including current movements of the earth's crust, is of fundamental importance.

The concept of geological risk should provide the key to resolving the question not only of where to build but also of how to build nuclear power plants—in above-ground, underground, or semi-underground versions. Indisputably, the safest and environmentally cleanest option is to locate reactor units underground. Unfortunately, until recently it has not been studied seriously in our country, with high cost usually given as the reason. Yet specialists' calculations, as well as the experience of building and designing underground nuclear power plants in Norway, France, the United States and Sweden, show that their cost is no more than 10-15 percent higher than above-ground versions. And they entail a whole series of advantages: in the case of an accident at such a plant, the level of radiation pollution of the surrounding area is less than one-thousandth the level it would be with an above-ground plant; when a plant is sunk below the ground, the level of seismicity drops by 1.5 to 2 points; and work to bury the plant's spent fuel becomes considerably simpler and less costly.

Additional Compensation to Chernobyl Victims

90UN2517B Kiev PRAVDA UKRAINY in Russian
10 Jul 90 p 1

[Report by Ukrainian SSR Council of Ministers Information Sector: "Additional Benefits to Victims of Chernobyl Disaster"]

[Text] The Ukrainian SSR Council of Ministers has adopted two resolutions, through which additional benefits shall accrue to the populace, who were victims of the results of the disaster at the Chernobyl AES [Nuclear Power Station].

Country-style homes with outbuildings from the state or public housing supply, into which citizens from the territory subjected to radioactive contamination moved in the years 1986-1990, or will be moving into, shall be transferred to them free of charge as their personal property.

The cost of the housing thus turned over, built or purchased by enterprises and organizations, kolkhozes

and sovkhozes, shall be compensated for by means of funds earmarked for the liquidation of the results of the disaster at the Chernobyl AES.

The aforementioned citizens, who built or acquired country-style homes with outbuildings at their own expense in rural areas and urban-type settlements, shall be compensated for their cost, which shall be determined according to established procedure by appraisal commissions of the executive committees of local Soviets of People's Deputies.

Free supplies of medication with a doctor's prescription or free ambulatory treatment has been established for that portion of the populace living in the populated places subjected to radioactive contamination, as defined in Ukrainian SSR Council of Ministers and Ukrainian Trade Union Council Resolution No 315 of 14 December 1989, along with the subsequent amendments; and also for those citizens evacuated in 1986, who received a dose of radiation of the thyroid gland that exceeds the allowable.

For this purpose, the Zhitomir, Kiev, Rovno and Chernigov Oblast Ispolkom have been allocated funds in the amount of nearly 2.7 million rubles.

Shortage of Dosimeters Reported

90UN2517A Kiev PRAVDA UKRAINY in Russian
7 Jul 90 p 4

[Interview with I.I. Velikoivanenko, chief of the production department of the Kiev enterprise of the All-Union Association "Izotop," by V. Zorya: "Chernobyl Problems; They've Stopped Accepting Orders"]

[Text] We described in detail how to purchase a dosimeter in the interview "Kontroler v...karmene" [A Monitor in...One's Pocket] (21 March). Following this publication, the Kiev inter-republic enterprise of the all-union association "Izotop," was literally swamped with orders from those wishing to acquire the "Bella" home dosimeter. The number of requests received, it was learned later, was roughly equal to the two-year manufacturing program for this type of instrument.

"Since 1 June," says I.I. Velikoivanenko, chief of the production department of the Kiev enterprise of the All-Union Association "Izotop," "we have been forced to temporarily suspend acceptance of orders for our instruments. First of all I would like to offer apologies in the name of Izotop to those who have sent us letters in recent weeks: they can be taken into consideration only as orders for 1992. But as before, the citizens of 'strict' radiation monitoring, who appealed to us in mid-May, can count upon our swift cooperation. Unfortunately, among those 'first in line,' there are quite a few who did not provide complete information, or it was illegible. We simply cannot fulfill that portion of the orders."

[Zorya] Ivan Ivanovich, clearly such a demand was not anticipated, and it greatly exceeded the supply. Why then is production volume for domestic dosimeters growing so slowly?

[Velikoivanenko] It is growing faster than it seems. Beginning in 1990, hundreds of thousands of instruments will be produced annually in the country. It is another matter that they are not freely sold in the Ukraine, even four years after the Chernobyl disaster. In my opinion, it was Ukrainian SSR Gossnab that made an error. First of all, in that it has underestimated the demand. Unfortunately, Izotop's report on guaranteed demand for a half-million dosimeters in the republic was not brought to the attention of the Ukrainian SSR Council of Ministers. And secondly, Gossnab overestimated the prospects for and the period of the start of wide-scale production of the instruments in the Ukraine. And when delays arose here, it was decided to request of the center for the initial period only 3,000 Bella indicators. As it turns out, that's a drop in a bucket! They should have asked for at least 20 or 30 thousand... And that is why the basic amount of the instruments produced this year will be realized not at our place, but in neighboring Belorussia, in spite of the fact that they long ago began serial production there of local design.

[Zorya] But what will Izotop's contribution be?

[Velikoivanenko] Our association will assist in production of dosimeters, completing their most important components—the gas-discharge counters. In addition, Izotop will soon be receiving simple warning indicators costing up to 60 rubles from national sources. It is planned to sell these instruments via culinary wares stores in retail trade, and by collective orders (on payment in cash). One can already inspect sample instruments in our show-room (Kiev, 152 Gorkiy St.). We anticipate that they will be of particular interest to the rural residents in the areas which suffered most from the Chernobyl Nuclear Power Station disaster.

In short, Izotop is fully aware that domestic dosimeters and radioactivity meters will be urgently needed for a long time to come. And the onset of balance between supply and demand in this question can, unfortunately, be expected no earlier than three or four years hence.

Students To Work Radioactive Fields in Belorussia

90UN2738B Moscow LITERATURNAYA GAZETA
in Russian No 35, 29 Aug 90 p 2

[Report by LITERATURNAYA GAZETA Staff Correspondent A. Kozlovich: "But Send Students There..."]

[Text] On 1 September, a dangerous surprise awaits Belorussian students now returning to their places of study.

The BSSR Ministry of Public Education published the order "On the participation of student youth in agricultural work in 1990." By this order, based upon the recommendations of the BSSR Ministry of Health, students over age 18 are brought into agricultural work on territory with radioactive contamination of up to 15 curies per square kilometer. The republic parliament established "hazard" pay of R15 per month for all the residents of these territories starting 1 August, yet the minister just appointed by the parliament is sending youth there. True, the minister adds that the students should not work in places "where there is elevated dust particle formation." But tell me, who has seen farm work not accompanied by dust? Who, and with what apparatus, is going to measure its level? The republic parliament has resolved to complete in 1991 the relocation of people residing in territory with radioactive contamination of 15 or more curies per square kilometer, but the order just cited graciously permits students to labor there, if they themselves so desire. The order says nothing of a stimulus for the students' self-sacrifice in the Chernobyl fields. And apparently, not in vain.

Radioactive Pollution Source Discovered in Brest

LD0609162990

[Editorial Report] Moscow Domestic Service in Russian at 1222 GMT on 6 September carries a 6-minute report from Brest by Aleksey Guretskiy on a dangerous source of radioactive contamination, measuring approximately 50 meters by 800 meters, which can be found next to the main entrance of the Brest fortress. Twenty years ago a concealed railway siding was built here to transload radioactive raw material. No one knew anything about it in the town. Even the local authorities knew nothing. When the local authorities found out, they did all they could to have it removed. The transloading site was moved outside town. Some topsoil was removed. Several railcars took it away and dumped it outside town. Radiation readings taken by the Brest Oblast Environmental Protection Committee officials are alarming. The radionuclide contamination levels are very high; in some places the background radiation level is between 700 and 800 microroentgens, many times higher than the permissible level—20, 35, and even 40 times higher. Above ground and up to one meter high the contamination level is between three and four times higher than the permissible level. Breathing the air which contains these radionuclides poses a danger.

What radionuclides are here no one knows, and this is even more dangerous. Unfortunately, the contamination zone is freely accessible to people who live nearby or who pass by. The zone is not fenced off. There are no warning signs. This site has been in existence for more than 20 years and up until now everyone has had free access to it. Water wells used by the town are found less than 100 meters from the site where the radioactive material has been transferred. Homes, a kindergarten, and a busy thoroughfare are to be found next to the dump. City fathers are alarmed, but say that they cannot continue

the clearing operations, since they do not know what to do with the dangerous soil. They have asked atomic power engineering and railway industries for help.

More on Brest Radioactive Hot Spot

*PM1209143190 Moscow Television Service in Russian
1430 GMT 9 Sep 90*

[From the "Vremya" newscast: Report by A. Guretskiy, A. Sinegubov, identified by caption, on radiation pollution in Brest]

[Text] [Newscaster] A dangerous radiation pollution area has been discovered in Brest.

[Reporter] This area, and we could hardly believe this at first, is located 300 meters from the main entrance to the Brest Fortress. The alarm was sounded by the Brest Oblast Environmental Protection Committee. Its chairman, Vasiliy Sevastyanovich Kosyanchuk, promised to meet us at short notice, to see for himself on the spot what was going on. Radiation was measured. And here is the result.

How much?

[V.S. Kosyanchuk, chairman of the Brest Oblast Environmental Protection Committee, identified by caption] On this spot it is 700 microroentgens per hour. That is 35 times higher than natural background radiation.

[Reporter] The cause appeared to be the soil, which seemed quite normal at first glance. More accurately, the radiation came from remnants of radioactive raw material which used to be transloaded here. [site appears to be on a disused railroad track]

Have you informed anyone about this?

[Kosyanchuk] But of course. The hydrometeorological center, the oblast hygiene and epidemiological station, the oblast civil defense headquarters, the oblast soviet executive committee: What more could we have done?

[Reporter] The transloading facility was closed down, and a layer of the soil was removed. But clearly the job was not completely finished. And so a seat of lethal danger has appeared in the oblast. Meanwhile there is a well from which drinking water is drawn, a kindergarten, housing, and a lively thoroughfare nearby. And the population is totally unaware.

So why this inexplicable delay?

[M.O. Lyakhov, deputy chairman of the Brest City Soviet Executive Committee, identified by caption] The delay is not inexplicable. The executive committee has been attending to this for a long time. We managed to close down the facility. Unloading no longer takes place there.

[Reporter] At the Oblast Soviet Executive Committee a special section to deal with the consequences of the

Chernobyl accident has set up. The danger spot about which we have been talking can be seen from its windows.

Antinuclear Protest in Ufa

*LD0109111490 Moscow World Service in Russian
0930 GMT 1 Sep 90*

[From the "Soviet Chronicle" feature of "Soviet Union Day by Day" program; report attributed to Interfax]

[Text] At the instigation of a combined committee of public organizations, there has been picketing of the building in Ufa which houses the Council of Ministers and the Supreme Soviet of Bashkiria. It is demanded that the construction of the Bashkir Nuclear Power Station be halted. A rally was held in the town and up to 500 people attended. A resolution was adopted. The demand was voiced that the construction of the nuclear electric power station should be stopped immediately and that the towns of Ufa, Sterlitamak, Blagoveshchensk, and Neftekamsk should be regarded as ecological disaster zones.

Rostov Nuclear Power Station Project Mothballed

*PM1109135990 Moscow IZVESTIYA in Russian
5 Sep 90 Morning Edition p 1*

[Report by own correspondent V. But: "Nuclear to Thermal"]

[Text] Rostov-na-Donu—The USSR and Russian Soviet Federated Socialist Republic Councils of Ministers have adopted a decision on halting the construction of the Rostov Nuclear Power Station. It proposes an examination of the feasibility of converting the facility to a thermal power station operating on fossil fuel.

A telegram containing this announcement went to three addressees: the Rostov and Volgograd Oblast Soviets and the Volgodonsk City Soviet. Decisions to close the station were adopted at sessions of several city and rayon soviets and then by the oblast soviet. The neighbors—the people of Volgograd—were also actively opposed to the construction. This was due to the extreme exacerbation of the political situation surrounding the project and delays in organizing an independent expert appraisal. In effect, the unstable situation was caused by the departments that were making everything a secret, even obvious facts. But the government had to make the final decision.

The relevant ministries were instructed to elaborate a plan for mothballing the facility. Many questions connected with the provision of social protection, work for the construction and operating personnel, and power for consumers in Rostov Oblast also have to be tackled...

Leningrad Antipollution Center Established

LD0809203590 Moscow in English to Great Britain and Ireland 1900 GMT 8 Sep 90

[Text] An antipollution center has been set up in Leningrad. It has united about 100 educational establishments, scientific research institutions, and enterprises. One of the center's chief tasks is to protect the Neva River and the Bay of Finland against pollution. The pollution level of the river and the bay arouses grave concern.

Meanwhile one of Europe's largest purification facilities has become operational on Bely Island.

Karelian Waters Seen Devastated by Pollution

90WN0252A Helsinki HELSINGIN SANOMAT in Finnish 27 Jul 90 p B3

[Article: "Industry Has Neglected Water Protection in Karelia"]

[Text] During the past few years, the quality of Lake Onega water has rapidly been worsening because many Karelian industrial plants discharge either completely untreated or poorly treated waste water into the waters of the lake. Among other substances, 4,000 tons of chlorite and 19,000 tons of sulphate have gotten into the lake.

According to the newspaper NEUVOSTO-KARJALA, a lack of purification plants and industry's ever-increasing discharges are making the situation worse. In an article published on the front page of the 13 July issue of the newspaper, the ecological condition of Lake Onega is described as alarming.

Quality of Surface Water Has Worsened

The quality of the area's surface water has been steadily worsening. Of the water samples taken from the lake last year, 33.6 percent did not meet the purity standards set for drinking water.

There are numerous examples of failure to comply with environmental standards in Karelia. In October 1988, fuel oil, a residue from the distillation of petroleum used for heating and lubrication, got into the municipal purification plant from a Petrozavodsk shipyard. The quality of the biological treatment at the plant worsened, and untreated waste water overflowed into Lake Onega.

The Karelian State Environmental Protection Committee recently examined the ecological condition of the Suoju River watercourse area and confirmed the fact that the laws governing the use of water resources had been flagrantly violated. Among other things, fertilizer from the farms in the area has gotten into the watercourse.

Furthermore, at the insistence of citizens, water samples were taken from the Suoju River Delta, in which toxic compounds used in pesticides were found. Although,

according to the rules, there should be none of these substances in the water at all, they are carelessly used on farms along the Suoju.

In 1984 the CPSU Central Committee and the Soviet Council of Ministers decided on the protection of Lakes Ladoga, Onega, and Ilmen. According to the decision, the industrial plants in the area would have to stop discharging untreated waste water into the lakes by 1990.

Purification Plants Lacking

However, the construction of purification plants required by the decision to protect the lakes has been progressing very slowly. The paper industry combine at Kontupohja has obtained an extension until 1992 to treat its waste water.

By the end of last year, however, work had been done on the construction of the water purification plant at Kontupohja amounting to only 16 percent of the cost estimate.

Construction has not even begun on the purification plants at Puodosi and Karhumaki, even though the appropriations will expire this year and next year. The Onega Tractor Factory water purification plant was supposed to go into operation as early as 1988, but only 92 percent of the work had been completed by the end of last year.

A reduction in the number of industrial construction projects is at present being considered in the governments of the Soviet Union and the Russian Soviet Republic. However, an appeal is made in the NEUVOSTO-KARJALA article to the republic's decision-makers to prevent the elimination of ecological projects from construction plans.

Officials Review Lithuanian Waste Treatment Plant Construction

LD3109223990 Vilnius International Service in Lithuanian 2100 GMT 31 Aug 90

[Excerpt] [Passage omitted] Construction of Kaunas Water and Sewage Treatment Plant facilities has not yet been started, while the Klaipeda City Biological Water Sewage Treatment Plans is lagging considerably behind schedule.

Today's Council of Ministers discussion, chaired by Deputy Prime Minister Algirdas Brazauskas, was dedicated to this problem.

The principal cause of the delay rests in the poor supply of materials. There is a threat that the funds allotted in the USSR budget for the current year's construction will not be used. A sum of R23 million had been allocated from [word indistinct] for the Klaipeda Water Treatment Plant, with nearly R10 million as yet unused.

Director Explains Tasks of New Moldavian State Environmental Department

90WN0248A Kishinev MOLODEZH MOLDAVII
in Russian 2 Aug 90 p 2

[Interview with Moldavian State University Professor Ion Ilich Dedyu, doctor of sciences and general director of the State Department of the Environment and Natural Resources under the SSRM (Soviet Socialist Republic of Moldavia) Supreme Soviet, by Yu. Semenova; date, place, and time not specified]

[Text] "In my opinion, your newspaper is one of the most reactionary publications"—the newly confirmed general director of the State Department of the Environment and Natural Resources just created under the SSRM Supreme Soviet began our dialog with that statement.

But, despite his quite negative opinion of MOLODEZH MOLDAVII, Doctor of Sciences and Moldavian State University Professor I. I. Dedyu willingly agreed to the interview. After taking up his new post, he abandoned political activity and favors consolidating all forces to protect the environment, regardless of their ideological views.

[Semenova] Ion Ilich, I congratulate you on such a high appointment. My question is: as was decided at the SSRM Supreme Soviet session, the State Department you head is not subordinate to the Council of Ministers?

[Dedyu] Yes. For now it is the only republic department which is subordinate to the parliament and its general director is subordinate only to the Moldavian Supreme Soviet session. A long and exhausting struggle preceded the appearance of this independent organ: according to M. Druk's conception, the department was to be part of the government. But I argued that in that case, from the legal standpoint we would have no power to monitor departments.

Imagine the situation: the construction of some ecologically harmful production facility has been planned. Basing the need for a new plant on economic considerations, the prime minister could give me directive instructions and simply pressure me and I would have to consent to this construction. If, I repeat, we were subordinate to the Council of Ministers. But by operating under the Supreme Soviet, we would be insured against such things. I must give credit to M. Druk; he evaluated the situation correctly and at the session he abandoned his conception and voted to subordinate the State Department to the parliament.

[Semenova] Will the State Committee for Environmental Protection and all the water inspection offices be included in the State Department or will the functions continue to be fragmented?

[Dedyu] No. We are concentrating all natural resources—water, land, and forests—in the same hands. We alone will manage their use. A scientific, legal, and

economic expert appraisal panel will be formed for each government order. We will decide, for example, whether or not to allocate land for construction. In any case, our decision will be final.

[Semenova] It is obviously too early to speak of any global program of nature and environmental conservation, but obviously the main areas of work have already been defined.

[Dedyu] They have been. The first is fundamental perestroika of the structure, legal rights, and obligations of nature conservation organs. An inventory of all natural resources will be made at all levels—beginning with the kolkhoz and the rural soviet and ending with the republic. An evaluation of environmental quality will be made. Draft laws on nature conservation, nature use, taxation, and the like will be developed and presented at the fall session of the Supreme Soviet.

The second thing is organization of ecological monitoring, that is, a comprehensive system to monitor and evaluate predicted changes in the natural environment in order to use it most rationally.

The third thing is ecological education and indoctrination of the population. The entire population, beginning with the peasant and ending with the manager of any rank should have the proper ecological sophistication; and this should provide the basis to hold any nature user accountable.

Finally, the fourth thing is establishment and development of both intra-Union and international ties.

That is as far as tactics go. But the main strategic direction of the State Department's work will be developing the scientific, legal, and organizational foundations of measures to protect the environment, that is, to introduce no-waste and low-waste technologies into agriculture, industry, and daily life. Unfortunately, the entire world, the United States, and France, and the FRG, and Japan, and other countries included, are making a fatal mistake today: they are spending intellectual efforts and material resources for purification structures rather than for no-waste technologies, and from the standpoint of preventive measures that is altogether unpromising. We are trying not to repeat the mistake.

[Semenova] Everything that you have told about is a matter of the future. They are problems which will not be resolved in one day. But the ecological situation today frightens people. They want to eat clean food products and enjoy clean water now without waiting for the introduction of no-waste technologies. And they have a right to expect that since a special department has been created, the situation will change for the better in the shortest possible time. They are tired of talk, don't you know. So they would like to hear of the first steps on the most ordinary everyday level.

[Dedyu] First of all, through the mass media the department will pass on reliable information on the condition

of the environment. People should know what kind of air they are breathing, what they are eating, and what they are drinking.

We will utterly and completely support any movement to protect the environment, including through rallies, strikes, and picket lines. We are trying to do it in such a way that people trust us. And first of all we will "pressure" the Ministry of Trade and try to see that the food products on sale are ecologically clean, regardless of what point of the globe they come from. And, of course, we are going to monitor agriculture and industrial enterprises very closely.

[Semenova] Who will work in the Department?

[Dedyu] Only professionals. I don't need demagogic propagandists or dilettante supporters of the "Greens". Only first-rate professionals and experienced specialists. It is too serious a department to allow just any impractical schemers or adventurists in it.

We will also train cadres. I am not abandoning my scientific activities; I will continue to be in charge of the inter-VUZ [higher education institution] ecology department; that, by the way, was my second condition when I stood for general director. Everyone will study essential ecology, beginning with medical workers and ending, let us say, with musicians. It is our daily bread if we want to survive.

[Semenova] At the session which ratified the new department and you as its general director, a law was passed which stipulates that a leader of your rank cannot be a member of any political organization. I believe it is common knowledge that you are a member of the CPSU. How will your new appointment tally with your party principles?

[Dedyu] I have been carrying a party card for 40 years. And now, when a law forbids me to be in the ranks of the CPSU, I certainly do not intend to climb up to the roof of the university and publicly burn it.

I will follow the natural path—I will surrender my party card for the term of this leadership position.

I am not a child and I do not change my principles. I was against the decision of the 2nd Congress of the National Front, which voted that a National Front member could not be a member of another political organization. As a communist, I was formally expelled from the National Front, even though I was one of the founders of this movement. It is not the party which is to blame for the fact that such a situation has taken shape, but its elite. And therefore I did not abandon membership in the CPSU at that time.

Now it is a different matter. An executive does not have the right to "carry" the interests of one party or another. I agree with that. So I will temporarily give up my party card.

As for the other workers in the department, for goodness' sake let them be involved in politics. In their spare time. Let them defend the interests of their parties. After work.

And I beg to emphasize especially that our task is not to defend the ideas of the National Front, the Intermovement, or Gagauz-khalky. Our task is to preserve the genofund of the republic. The genofund of the republic, not the genofund of the Moldavians, the Gagauz, the Jews, or the Russians separately. Let us end on that note.

[Semenova] Thank you for the interview. Good-bye.

Ukrainian 'Green' Party Manifesto Announced

90UN2483A Kiev LITERATURNA UKRAYINA
in Ukrainian No 29, 19 Jul 90 p 6

[Speech by Yu.M. Shcherbak: "Manifesto of the Ukrainian 'Green' Party"]

[Text] We, the citizens of the Ukraine,

- having become aware of our responsibility to our native land and our people in this dire time of historical trial;
- understanding the depth of the political, ideological, economic, ecological, social, and national crises, which have gripped the Soviet Union;
- having the conviction that the existence of the totalitarian pseudo-socialistic empire in the Stalinist-Brezhnevite mold, led by a single party is no longer possible;
- looking forward the ideals of the spiritual and physical rebirth of our people, to a worthy sovereign status in the world, one which is insured by means of all the international standards, which apply to human rights;
- aspiring to put an end to the complete destruction of our native, Ukrainian environment—our steppes and hill, rivers and forests, our cultural and historical heritage—everything which was everlastingly bequeathed to us by God as the Ukrainian people's domestic hearth;
- believing in the need to undertake political action to defend of the people and the natural environment in which they live;
- upholding the principles of humanizing, democratizing, de-ideologizing, and de-militarizing society on the basis of positions of ecological thinking and ecological ethics.

WE ARE SOLEMNLY PROCLAIMING THE CREATION OF THE UKRAINIAN "GREEN" PARTY

Henceforth we are entering Ukraine's political arena in order to struggle to gain a better status for our people and our environment. We are proposing to cooperate in good faith with all the constructive and democratic forces in Ukraine, which aspire [to the goal] of renewing our land.

The Ukrainian "Green" Party rejects all the misanthropic, ideological dogmas of class struggle, national and racial animosity.

Setting forth as its goal the creation of a society that has a sense of ecological solidarity, in which the interests of the individual, of every social and professional group of citizens of every nation will be harmoniously united with the higher laws of Nature's biosphere, the Ukrainian "Green" Party is resolutely rejecting the use of violence as a method to attain its projected goals.

The color of blood will never be on our flags!

Chains and barbed wire will never become symbols of our political beliefs! No bloody tyrant will ever become our spiritual leader!

We are calling on peasants and workers, scientific-technical and artistic intelligentsia, the residents of cities and villages, women and men, the youth, and older people to join our ranks. We are calling on all the unfortunates, those, in need of mercy, and those, who aspire to express their mercy to people and nature. We are calling on people of all nationalities, of all faiths and various world views. We are calling on free-willed citizens, who live on the territory of the Ukraine from Kharkov to Lvov, from Kiev to Odessa, from Donetsk to Simferopol, from Zaporozhye to Uzhgorod to join the Party of the "Greens."

Our goal is not divide Ukraine into little bits, not to sow discord among whoever lives in our land, but to unite all the citizens of Ukraine and those, who live beyond its borders, around our party's green flag, around the idea of the humanity's survival, the people of the nation's survival, of saving our ecology for the future.

The Ukrainian "Green" Party is a party for those people who want to remove themselves and their children from the ominous cloud of Chernobyl, from the shadow of chemical and radioactive death, for those who want to see Ukraine green, flowering, flowing with water, as an eternal, genuinely sovereign European nation—in the common home of free and happy people.

Whoever loves his native land, can become a member of PZU [The Ukrainian "Green" Party].

Whoever respects an individual as a creation of God, the most responsible part of Nature, can become a member of PZU. Whoever personally regards freedom, honesty and decency, the right to have independent thoughts and beliefs, can become a member of PZU. Whoever opposes the principles of political terror and state violence, can become a member of PZU. Whoever aspires to gain radical changes in the economic, political, social life of the country can become a member of the Ukrainian "Green" Party.

Citizens, brothers and sisters!

We are calling on you to morally and materially support the Ukrainian "Green" Party—a party [advocating] community peace, a party [advocating] ecological justice and a thriving society.

The Ukrainian "Green" Party proclaims its existence—from today on and forever!

[Read by Yu. M. Shcherbak on 22 April, 1990 at a meeting dedicated to Earth Day]

Ukrainian 'Green' Party Draft Statute

90UN2483B Kiev LITERATURNA UKRAYINA
in Ukrainian No 29, 19 Jul 90 p 6

[Manifesto: "Project: A Statute of the Ukrainian 'Green' Party"]

[Summary]

I. GENERAL REGULATIONS

1. The Ukrainian "Green" Party (PZU) is a voluntary political organization, which unites the citizens in the Ukraine for the purpose of preserving a free and healthy life for people in an ecologically clean environment, for preserving the Ukraine's environment from the negative affects of economic and political developments. PZU supports the cause of renewing the environment, culture, and freedom of the Ukraine by means of [fostering] a developing democracy, humanism, and demilitarization of society.

2. PZU acts on the basis of democratic self-administration in accordance to the statutes and programs and the constitution of the Ukrainian SSR. The statutes and programs of PZU are to be passed at the party's founding congress.

3. The founding principles of PZU are being proclaimed in the party's manifesto and program.

4. PZU is cooperating with the association "Green World," state, party and community movements in the Ukraine, other republics and nations, and the Ukrainian diaspora.

6. [as published] The association "Green World" remains a non-party organization, an unregulated mass organization.

II. MEMBERSHIP IN PZU

1. Members of PZU can be full-aged (from 16 years on) citizens of the Ukraine, who participate in party organization activities, adhere to the PZU statute and program requirements, and act in accordance to party decisions, and pay their party dues.

2. In order to join PZU each citizen should write a statement. Membership begins with the moment of acceptance.

3. At the first stage (before the congress) in order to create a party organization in centers, districts, city, oblast, and regional organizations or in centers associated with "Green World," PZU initiative groups are being formed, which will accept statements from people

desiring to make them and carry out resolutions concerning accepting people into the party.

After the formation of the party organization, its general meetings will take place, at which its head, secretary, and treasurer will be chosen. At this stage, the head and secretary are delegated to attend the oblast party conference. The first party organization registers itself, if there are no less than five individuals in its ranks.

4. At the second stage of decisions regarding acceptance of citizens to PZU, the first organization is chosen at general meetings by a majority vote. If the party organization rejects an accepted candidate, the candidate has the right to protest to the party's oblast governing body, where a legal commission will be examine his case.

5. Membership in the party ends in the case of leaving it or being expelled, and also for not paying membership dues for a period of two years. In order to leave the party, it is necessary to make a written statement to the PZU party organization or club.

6. A member of the party can be expelled for acts that are at odds with the party's philosophic principles and statute and for discrediting the party. Only the PZU oblast governing body can expel someone from the party [acting on] a statement from the central organization.

III. THE RIGHTS AND OBLIGATIONS OF MEMBERS OF PZU

1. Each member of the party has the right to:

- choose and be chosen to all the party organs;
- cooperate in working out all the resolutions and decrees of the party, statute, and program;
- create together with other members problem-solving groups on any level;
- express and uphold his views;
- participate in all the party actions;
- receive full information about PZU activity;
- receive the party's support in elections to councils at all levels;

2. Each member of the party is obligated to:

- to adhere to the program, statute, and the resolutions at the party congress;
- participate in the work of the local center or other party organ;
- participate in work in improving the republic and oblast ecological and cultural situation at his work place, home, and educational institution.

IV. THE ORGANIZATIONAL STRUCTURE OF PZU

1. The party structures its activity on a territorial-club basis. Party organizations can be created in villages, small-regions, apartments, regions, cities, within the oblast's administrative bounds. The party organizations can also unite people by profession in accordance to a

club principal, that is, to create party clubs at business enterprises and in organizations. The administration of the center is made up of a head, secretary, and treasurer, and it serves as the party-organization's executive organ.

2. The party organization elects the delegates to the oblast party conference and also to the PZU congress. The standards for representational governance are determined by the PZU oblast administration.

3. Each party organization in addition to determining the general line and platform of PZU, is independent in terms of working out its own orientation, formation, and methods of activity; each party organization has the right to pass independent resolutions.

4. The oblast party conference:

- meets once a year and elects the party's oblast governing body, the secretary, the legal, and the control-revisionary commission. The head and his deputy or co-head of the party's oblast governing body are elected at the oblast conference. The head or one of his substitutes (the co-head), the secretary, and the treasurer is confirmed by the oblast government staff workers;
- designates the party's political and ecological program of action in the oblast; formulates the principals of cooperation with other parties and political organizations, in conjunction with the oblast and local councils of people's deputies;
- makes an evaluation of the state of the ecology in the oblast;
- determines the need to have referendums, to conduct scientific checks and work, and also to undertake political actions;
- chooses the oblast governing body, the secretary, the legal, and the control-revisionary commission;
- listens to and confirms the reports of the oblast governing body and the legal and control-revisionary commission.
- presents and supports candidates to all councils at all levels;
- introduces propositions to the party's statute and program;
- determines the procedure for elections and the standards for representing groups at the PZU congress.

5. The oblast governing body of the party:

- is chosen at the oblast party conferences; and it has in its composition political and ecological councils, a secretary, a legal commission, an information-press agency, and an administration and supply branch;
- is the main executor and representative organ of PZU, which directs the party work in the oblast;
- represents PZU in state institutions, community organizations of the oblast, and supports ties with them; cooperates with the oblast association "Green World," with parties and organizations of other republics and nations;
- studies the current political, economic, ecological, and cultural problems and discusses the means and methods for resolving them;

- organizes the ecological checks, referendums, meetings, demonstrations, and picketing;
- registers party organizations;
- discusses rank and file issues;
- examines and approves of estimated expenses, accounting reports and the balance books of PZU in the oblast;
- designates an editorial board for the oblast newspaper of PZU; designates the name, circulation figures, and frequency of publication of the newspaper;
- summons the oblast party conference;
- convenes no less than once every two months;

6. The congress of PZU:

- is the most important organ of the Ukrainian "Green" Party convened once a year; and it determines the party's main political direction. By initiative or by demand of one third of the party organization, or in the event of very unusual political events, the congress can be convene an extraordinary PZU congress;
- in addition to the delegates, the regular staff workers from the oblast governing bodies can participate; deputies from the Higher Councils of the Ukrainian SSR and USSR [can participate], but do have the right to cast a deciding vote;
- chooses the central governing body, the head and his deputies or co-heads, the secretary, the leaders of executive organs, the editor, the legal and control-revisionary commission;
- listens to and approves the reports of the central governing body and the control-revisionary commission;
- creates a temporary and permanent commission according to the party's needs;
- determines the main policies, means and methods of party work;
- gives an evaluation of the deputies' actions, who belong to PZU, who have posts in the Higher Councils in the Ukrainian SSR and the USSR.

7. The central governing body of the party:

- is chosen at the party congress and has in its body political and ecological councils, a secretary, a legal commission, an information-press agency, and an administration and supply branch;
- is the main executor and representative PZU organ, which coordinates the party's activities in the period between congresses;
- convenes no less than four times a year;
- registers the oblast party organization;
- convenes and prepares the PZU congress;
- examines current political, economic, ecological, and cultural problems; discusses the means and methods of resolving them;
- represents PZU in state institutions and community organizations of the republic; supports ties with

- "Green World," parties and state organizations, parties from other republics and nations, and the Ukrainian diaspora;
- coordinates the activity and assists in the work of the oblast party organization, and also deputy's groups in the councils;
- recommends and approves of staff inventories, the estimated expenses, the accounting reports and balance books of PZU;
- approves of the make-up of the legal commission, the editorial staff, the financial-administration and supply division.

The decisions of the central and oblast governing bodies of PZU are passed at the plenums with a majority vote with the presence of two thirds of its members.

8. The Secretariat of the PZU:

- is chosen at the congress (or at the oblast party conference) and is the permanent executor of the party organ, who conducts the daily organizational matters and coordinates work;
- coordinates the constant link between the party organizations at all levels, and also with the community, state organs, and institutions, the mass media, the association "Green World," and parties and movements in other republics and nations;
- works on projects, like regulatory documents, party resolutions, the party's ecological and political decisions and requirements;
- controls the PZU financial-administration and supply division;

9. The legal commission:

- is chosen at the congress (or at the oblast party conference) and is subordinate to the central (or oblast) governing body of PZU;
- decides the party's rank and file and juridical matters, and also points of argument between party organs of various levels; the legal commission defends party members from persecution;
- decides on questions related with the elections to the councils at all levels;
- decides issues related to bringing violators of ecological laws and requirements to justice, making them answer for their transgressions;

10. The control-revisionary commission:

- is chosen at the congress (or at the oblast party conference);
- insures that the statute is adhered to and the resolutions of the congress are carried out;
- reviews the organizational, administrative and supply and financial activity of the executive organs of PZU.

11. The secretariat, the legal and control-revisionary commission of the oblast party organizations are no under the control of the central organs, except at the congress of the party;

12. The financial-administrative and supply division:
- is determined by the secretariat and is approved by the central or the oblast governing body of the party;
 - are occupied in working with the party dues and the financial and administrative and supply matters;
 - spends the ecological funds and finances political actions and the party's ecological programs;
 - is responsible for the party building sites and possessions.

V. THE BUDGET, POSSESSIONS AND STATE OF PZU

1. The party budget is established with the membership dues, publishing profits, business activities, and voluntary contributions.

2. Membership dues are 5 karbovanets to join and 10 karbovanets annually for employed adults; 3 karbovanets to join and 5 karbovanets annually for students, house wives, pensioners and so on (the cost of dues may be reviewed for adjustment on account of inflation).

3. The local party organizations gives 30 percent of its dues to the oblast division of PZU, which in its turn gives 30 percent of its income to the central governing body.

4. The funds of PZU are used for carrying out political, cultural- educational, natural preservation activities, and also for obtaining material-technical equipment to allow the party to operate and for maintaining needed staff personnel.

5. PZU has its own staff workers to work in the party's organizational, financial, and technical activities.

6. The central and oblast governing bodies create special money funds to grant for ecological assistance, conducting research and academic work, ecological investigations, obtaining new technical supplies, providing of the ecological and cultural programs. The ecological fund of PZU is not subject to paying taxes, customs fees and other fees to the state budget.

VI. THE RIGHTS OF PZU AS A JURIDICAL SUBJECT

1. The central and oblast governing bodies of PZU are juridical subjects. They have a seal, stamp, the right to open an account in the state bank and to receive checks with its name on them.

2. The local and district party organizations based on the resolutions of the oblast or central governing body can also become juridical subjects and receive the right to get a seal, stamp, and open their own account.

3. PZU has its own emblem and symbol, which is being designed by order of the central governing body and is approved at the party congress.

4. PZU can cease its activity on account of the central governing body's decision or the party congress.

Ufa Environmental Problems, Yeltsin Visit Reviewed

90WN0254A Moscow KOMSOMOLSKAYA PRAVDA in Russian 15 Aug 90 p 1

[Article by KOMSOMOLSKAYA PRAVDA correspondent G. Agisheva, Ufa: "Yeltsin on the Roof"]

[Text] Immediately after he came to power, Yeltsin took a long trip around the country. He himself defined his purpose: The chief of state should have his own information. There is more than enough information.

The Bashkir AES [Nuclear Electric Power Station] is built to the highest technical standards. It is nearly completed. There is one "however": The site is cause for great danger. Here is one opinion: The Bashkir AES is on ground saturated with groundwater and it is on a tectonically active fault (Institute of Geology, BNTs UO [not further identified], USSR Academy of Sciences).

A referendum held in February 1990 in Neftekamsk and Krasnokamskiy Rayon showed that 98 percent of the population is opposed to the Bashkir AES. However, it is not easy to "remove" the plant. A large construction base has been built in the past 10 years; 62 million rubles out of 72 have been spent. A unique 8,000 strong collective of industrial electricians, installation workers and equipment operators has been put together. A settlement has been built to take care of all human needs. The birth rate here is three times higher than the national average.

In addition, 430 million rubles in capital investments have been spent, the reactor and its turbines are completed and, Bashkiriya, as the rest of the country, will soon experience a serious energy shortage. With the approval of a declaration of sovereignty in neighboring Tatarstan, the slogan "Friends are friends, but keep the money separate" will be implemented, electricity meters will be installed and the country's Unified Energy System will cease to exist. On the other hand, after Chernobyl, how can one reassure the 4 million people in the republic about the need for the nuclear power plant. The 98 percent against is an impressive figure and was not taken out of thin air. Aware of all this, Yeltsin suggested the following: waiting for all documents from an environmental impact statement by USSR Minenergo [Ministry of Power and Electrification], trying to convert the plant from nuclear to natural gas, and thinking about mothballing the plant.

On the eve of Yeltsin's visit to Bashkiriya there was an accident at the much troubled "chemical" Sterlitamak. Often during the summer here the completely still air has its effect: A bluish grey cloud smelling strongly of chlorine hung over the city. People lost consciousness in the street. Emergency medical personnel who tried to help them also succumbed.

The 700 hectares of the so called "white seas" formed by industrial wastes are shocking indeed. Bill Keller, a

NEW YORK TIMES correspondent, could not believe his own eyes. He asked everybody: "Can you really live here?"

A crowd of 50,000 in the square shouted "Yeltsin, Yeltsin..." The head of the Russian Federation went out on a balcony and photographers captured a unique sequence. Boris Nikolayevich later said: "At least I have not had to go up on the roof yet." The impression made by Sterlitamak was not simply depressing, it was sickening.

The solution? There is one at hand; it is based upon sovereignty. The plant workers should be masters of their own output and the profits obtained from it.

This same key also applies to the discussion in Ufa concerning the Khimprom Association, guilty of polluting this city with phenol last spring. V. Ya. Zheleznyak, the director of the association, pointed out the main problem, which is that the city's inhabitants do not want to suffer any longer from herbicides, chlorine and dioxin. However, for the plant these mean more than 2,500 partners around the country.

Once again, everything is based upon independence. Khimprom keeps 3 [million] of the 20 million convertible rubles it earns from product sales. Twenty million rubles annually during a five-year plan would be sufficient to completely rebuild the plant, replacing equipment that has been in use since 1943.

B. N. Yeltsin set a deadline: Present ideas about herbicides in three months, and dioxin in a year. Starting in 1991 the association will retain all profits. However, I am certain that this decision will not satisfy the city's inhabitants. They think that this enterprise should not remain within the city limits for another day. However, this would require a miracle.

Bill Keller reflects: "In the West Gorbachev's prestige is so great that it is difficult to think about any other figure. However, on this trip I got along well with Yeltsin. I am now convinced that Boris Nikolayevich is really getting into problems and wants to solve them. However, I do not know what will be necessary to overcome them. After all problems..." Are higher than the roof?

Sterlitamak Chemical Pollution, Yeltsin Visit Reviewed

90WN0254B Moscow PRAVDA in Russian 14 Aug 90
Second Edition p 2

[Article by PRAVDA special correspondent N. Morozov, Bashkir ASSR: "In the Poisonous Fog"]

[Text] Even at the distant approaches to Sterlitamak I could smell the aroma of the "Heavy Chemical Industry." When I got close to the industrial giant—the Kaustik Production Association, I became slightly nauseous.

A chemical worker assured me "Fortunately for you, a little wind is blowing today. One can still breathe. It is rough for all of us local citizens on a calm day."

One such calm day was 8 August, one that brought a social storm to Sterlitamak.

In the morning a bluish grey cloud with a distinct odor of chlorine moved over the city from the industrial zone.

City dwellers began to call the Kaustik, the synthetic rubber plant and the Soda Association: Where is the gas coming from? Neighboring chemical plants began to nod their heads. With Olympic calm enterprise managers said that their ecological situation was normal.

It is strange that A. Islamshin, chief engineer at Kaustik, is talking about a "norm" when, according to the local press, 33 shops at this association are operating without agreement from the state sanitation service and there is not even a methodology for determining maximum permissible concentrations of many toxic products emitted into the atmosphere.

In the afternoon a group of demonstrators formed quietly. It consisted principally of women fearful about their children's health. This group marched to the city center where, at the building occupied by the gorispolkom and party gorkom, there was a stormy meeting. The city fathers promised to promptly find the source of the chlorine emissions and to shut down dangerous operations. The Presidium of the City Soviet of People's Deputies held an emergency session and, after discussing the situation, declared the ecological condition in the city to be an emergency because of the gas pollution. A temporary emergency committee was created.

One can understand the concern of the citizens of Sterlitamak. In my opinion the essential points were succinctly described by O. Pershin, deputy to the city council: "For more than three years we have been fighting to improve the ecological situation in the city and the region. What has come of it? USSR Council of Ministers decree No 781, on improving the ecological situation in Sterlitamak and Salavat, has not been implemented, the decisions of last year's conference with comrade Gusev, deputy chairman of the USSR Council of Ministers, remains only a piece of paper; the same holds for Bashkir ASSR Council of Ministers Decree No 182. There has been no foreign exchange for reequipping industry...."

In addition to demands to quickly improve the ecological situation, demands of a political nature also resounded at the meeting. Among them were calls for the resignation of the present leadership of the city council and party gorkom and for converting their building into a treatment institution. A city strike committee was set up. If the resolution passed at the meeting is not implemented within a month, this committee will call for a general strike in the city.

On 11 August V. Yeltsin, chairman of the RSFSR Supreme Soviet, visited the city.

"I have been travelling for a week through Tatariya and Bashkiriya. However, nothing made such a strong impression upon me as did my visit to the Kaustik Association. It is depressing, simply sickening," he said at a meeting with inhabitants of Sterlitamak and surrounding villages.

The meeting between the head of the Russian parliament and workers began in a hall at the headquarters of the synthetic rubber plant, but had to be moved outside. Thousands had come to learn what was to be done about the emergency ecological situation. Boris Nikolayevich had no choice but to continue his dialogue with an audience of thousands from a balcony overlooking the square in front of the building.

The speaker saw the reason for the ecological calamity in the voracious financial appetites of all-union ministries and departments. Kaustik, needing large capital investments for environmental protection measures, retains only 10 percent of its total profits. The chairman of the RSFSR Supreme Soviet said that the September session of that soviet would pass a tax law easing the state's financial pressure on enterprises. It is proposed to reduce the profit tax rate from 45 to 35 percent.

Of course, the inhabitants of Sterlitamak, who suffer so much from harmful emissions, expected specific solutions to the ecological emergency from the head of the Russian parliament. "Boris Nikolayevich did not talk much about Sterlitamak's problems," noted one citizen during a quick interview. "He cannot see our pains from such a height," another commented ironically. However, most of the people I interviewed thought that the encounter was useful. N. Nigmatullin, a veteran of war and work, said "B. Yeltsin has let us know that our salvation is through full sovereignty, a sovereignty that will be approved and supported by Russia. It was important to hear at first hand about the future program of the Russian parliament, the experiences of which will probably be useful to Baskhir deputies."

From Baskhiriya B. Yeltsin went to Vorkuta.

Environmental Problems in Komsomolsk-na-Amure Investigated

90WNO260Z Moscow YUNOST in Russian No 7, Jul 90 pp 2-6

[Article by Ivan Kunitsyn and Aleksey Nikolayev: "A Spiral of Heroic Deeds: Life Under Threat"]

[Text] **Khabarovsk Kray. The YUNOST All-Union Independent Comprehensive Ecological Expedition has completed its work in the city of Komsomolsk-na-Amure in Khabarovsk Kray. At this stage its members were:**

Svetlana BAKLUSHINA—acting chief physician of the city SES [Sanitary-Epidemiological Station]; Vladimir DESYATOV—USSR People's Deputy, member of the

USSR Supreme Soviet Committee on Questions of Ecology and Rational Use of Natural Resources; Lyubov DIGOR—school director in the Kondon settlement; Vladimir KOSTIN—deputy chief of flight service at the Far Eastern Forest Fire Prevention Airbase; Sergey KUZMINYKH—chairman of the city Environmental Protection Committee; Vsevolod MARYAN—Scientific Department editor of the magazine YUNOST, and leader of the expedition; Vladimir POPOV—member of the coordinating committee, Khabarovsk People's Front, candidate of historical sciences; Vladimir TEPLYAKOV—leader of the ecological monitoring group of the Evoron settlement; Yevgeniy KHOROSHILOV—Komsomolsk-na-Amure CPSU Gorkom first secretary; Lyubov CHURILOVA—department chief at the city oncology dispensary; and citizens of the settlements of Belgo, Kondon, Evoron; activists of the Komsomolsk-na-Amure ecology movement; and members of the Committee for Support to Perestroyka.

I. The City and Man

"City of the Dawn," "City of Special Fate," "City of Communist Youth," and "City of the Future"—a multitude of such propagandistic bricks were laid in the foundation of the myth of Komsomolsk-na-Amure. Let us agree right away that, by employing the word "myth" we are in no way attempting to diminish the truly inhuman deprivations which 6,000 Komsomol-pioneers were forced to undergo, as they were dropped off in May 1932 on the left bank of the Amur in the area of the Russian village of Permskoe and the Nanay nomad camp of Dzemgi. Hardship is hardship. And heroism is heroism. They needed a lot of it, those who somehow endured the first, seemingly endless winter, the scurvy, the hunger and the cold dug-out earthen shelters, and the incredibly difficult struggle with nature and with themselves, not only for survival, but also for an idea.

The Komsomolites were led by the Idea. But the Idea itself was already a toy (and at the same time a scarecrow) in the hands of the Stalinist System. Consistent perhaps only in one thing—in its insatiable appetite; for at first there was nothing for the System to live on "on the high banks of the Amur." Well, they dispossessed every one of the kulaks in the village of Permskoe, where the general norm was considered having a few cows and at least a team of horses in every yard. They dispatched from this world the true pioneers—settlers from Perm province who had come from beyond the Urals virtually to the edge of the earth, who with their peasant gumption and sensible love of work had stood upon their feet in this free no-man's land, who at the same time made no demands neither upon the environment, nor on the local peace-loving small nations who lived there. But the Nanay people abandoned their centuries-old nomadic camp, and moved away from the new arrivals, deep into the Taiga. To them, small and unpretentious, it then seemed endless. Just as the Ulcham, Nivkham and Tafalaram did... Their forest and river gods did not immediately guess and explain to their wise shamans that, no matter where they set up their nomad camps, no

matter how far they would go in their migrations—all this would be fenced in by the invisible border of the territory of a new merciless, all-consuming, deaf, blind and heartless "god"—the Amurlag. The new idol acknowledged only its victims—bloody, hungry and tormented.

First gaining a foothold in the tangle of the Far Eastern Taiga, the Komsomol contingent arrived on two vessels—the Kolumb and the Komintern—and the lives of the young victims were caught up in the main artery of the region—the Amur; and soon the entire System in all its glory crept in as well. Hundreds of thousands of innocent people disappeared into this new "black hole," as if into a fire-box, which was named "the outpost of Soviet manufacturing and defense industry in the Far East." As we see, not all the bards of the System practiced lyricism. At the outposts people were obliged to perish, for otherwise what kind of outpost would it be? And they perished, they perished...

For every Komsomol member at "Amurdalstroy" [Amur-Far East Construction Administration?], there were hundreds of political prisoners and special settlers (dispossessed kulaks, citizens of Permskoe and other Amur villages were herded half-naked to somewhere or other, and from somewhere or other the same kind of slaves with hands darkened from endless peasant work were shipped in for penal servitude until death: a devilish game of chess by which millions of human beings were wiped from the face of the earth). Local hunters tell us that to this very day one can find a multitude of human skulls and bones amid the decaying vegetation in the Taiga. For decades the Taiga has been preserving these obelisks to the System, whitened by the rain and wind and gnawed by animals, stones concealed by grass and covered with moss, of those, who had neither the desire nor the strength to betray the land. The beginning of the irreversible death of the Taiga, of which we shall speak further below, coincided with the end of these tormentors. Everything is interconnected. Such fertilizer, you see, did not do nature any good.

Nor to the city of Komsomolsk-na-Amure, which was literally built on top of bones. Incidentally, we also know a lot more about the initial Komsomol-construction workers themselves. The genuine, unrestrained faith of the youth of that day, still unaware that it was being deceived, was pure and unselfish, full of the desire for independence and for active involvement in the course of life. For the repressive System, the irrepressible nature of the young people in their search for truth became a dissonance, which alerted them to danger. And the crushing of the Komsomol began. The inquisition ground up as many as it could right away; the remainder, depending upon their "guilt" before the System, were sorted out: some were given an Article, and were sent to the camps; others were sent on a Komsomol trip—and out of sight, into the thickets, into the dug-out huts, to the wheelbarrows, the pickaxes and the axes. And that is forced "enthusiasm" for you.

In its materials on its ecological expedition, YUNOST has already described the current condition of the so-called Stalin Cities—the centers of industrialization of the unforgettable 1930's and 40's: Angarsk, Magnitogorsk, Sterlitamak and Salavat. And nevertheless, Komsomolsk-na-Amure, even against their backdrop, remains a "city of special fate."

"A city of young people, where no one reaches old age," this is from contemporary Komsomol folklore (although the etymology of this expression is obvious: everyone is gone away, gone away...). And so, let us look more closely into the reason for which so many lives were ruined. This must be done, because Komsomolsk is in fact the symbol, the pinnacle in a certain sense of—the limits. Remember "the city of the future." To what kind of future have the recent all-powerful theoreticians and practitioners led us—who are, by the way, thriving even today; do they not, for now, wish to retreat from their principles?

Komsomolsk is a city of facades. This is our recently acquired national symptom—"facadeness"—and in the city on the Amur it is in high regard. On the river side one is greeted by the magnificent edifice of the river terminal, executed in the form of a modern multideck liner. After many hours on the multicolored river, Taiga and sky, its white bulk dominates one's view. True, in the terminal hotel, even if you resigned yourself to the lack of elementary facilities here, there wouldn't be any vacancies anyway. One should not even count on elementary hygienic conveniences, nor, by the way, on getting a bite to eat as normal people do. The tickets, as you understand, are not cheap. Knowing the extremely severe housing problem in the city, how can one not be astonished at such a scale? But when did these facades do any good for the people who live behind them? They are for those passing through: Let them oh, and ah, and let them think that if our money has gone for such a gateway to the city, that means things are no worse in the city itself.

But for those who nevertheless pass through this facade and, passing by the huge stone obelisk at the site of the landing of the first Komsomolites and the bronze multi-figure sculpture dedicated to the first builders, finds himself in the town, one is presented other facades. The houses on the main streets are plastered and are not without those artless excesses of "Stalinist" architecture, which was to send the message, "We have a lot of everything." Only do not go into the courtyards; for they are for the residents and not for you. Nothing that is not visible from the street has ever known plaster, or repair work; the bricks are worn away by time and have the coloration which most closely matches the word "melancholy." We will not try to explain the mud, the puddles, the garbage or the sickly vegetation: the foreigners who read YUNOST would probably not understand, but our own can imagine for themselves. While traveling along the city streets one regrets only the fact

that private traders did not sell us a means of transportation that runs on tracks. Wheeled modes of transportation are changed from a convenience into a sport: the Zhiguli's wheels will just fit in an open manhole for the heating-system or public utilities. One has to avoid dozens of such traps every day. And why do people think that the slalom is not popular with us?

The real Komsomolsk appears before you from the top of a hill [sopka], a wonder that still remains intact in the city not far from the Amurstal [Amur Steel] Mill. From its heights one cannot see the facades and brightly-colored banners with slogans like, "Let the Air Be Clean!" (whether this is a command or a prayer one cannot tell). The city is becoming like a stooped and utterly exhausted person, begging for mercy. Only standing here, over the clouds from the underground pipes and under the loops of those above, does one finally understand that the "city of special fate" (This epithet was proudly puffed up by L.I. Brezhnev at his meeting with the citizens, and rolled through the periodical press like a mighty wave), is indeed a symbol. It is the type of urbanized, antihuman utopia which to this very day is presented to us as the indisputable victory of the System.

The first impression one gets from the landscape that unfolds from the heights is that there are more smokestacks and factory complexes than houses. All the plants of Komsomolsk are located within the city. And not one of them has sanitary-protection zones. Residential housing is built right next to their gates. In the thinking of the "economical economists," it is, of course, far more convenient: from your home you cross the road to the entrance and you are already at work. But after all, people must breathe! But this, you see, seems not to have been anticipated at all.

Let us walk, for example, around the Electrical Equipment Plant (ETZ [Elektrotekhnicheskiy Zavod]). This enterprise is already practically worn out, just like the residential housing surrounding it. From the walls of the plant to the apartment windows—it is 15 meters; here too there are children's playgrounds and even a stadium. However, we do not advise a leisurely stroll. According to official data alone, the presence of the substances most dangerous to all living things, such as lead, exceeds the norm by a factor of 50. The gates of the stadium are boarded up; the running tracks are hemmed in by tall weeds, and the stands and the buildings are not being renovated—it is categorically forbidden to hold sporting events here: it is dangerous to one's health. That means, one may not run, and thereby take in an increased amount of the poisonous ambient air. It is well that this agency that has attached itself to Komsomolsk has at least acknowledged this (and incidentally, it was many years ago already). But here is the question—Can one work, and live, here? Bear and raise children? Purchase food products in local stores and eat them?

As a lofty act of humanism, the decision to move ETZ to the outskirts was made known in the city. But the

"ignoble" populace did not hasten to express its gratitude. Because it is not enough that one portion of the new plant will be "seated" on the citizens' only habitable garden and orchard plot, it has also been learned that as a result of the move and the new construction the capacity of this poisoner-enterprise will double.

From our chosen vantage point it is clear that although the city is called "on-the-Amur," it does not in fact have access to the river. Earlier this was completely obvious, as we were examining the "ecological wonder" of Komsomolsk from on board a small boat: all along the banks there are only factories, but residential houses—not a one. Everything here is for industry: the best locations, the best portions of the biosphere, and the most convenient approaches and transportation. As if on a whim, the enterprises accepted the existence of the only section of the Amur banks in the city limits that was not built up, where that especially ecologically-stable feat of humanity—the "Komsomolskite"—could stretch out on the sand, rest with his family, bask in the sun, and dare to take a dip, without having to contend with the overcrowded transportation "to the river." But the last window on nature has been completely boarded up. Two new plants are being built here. And so that Father Amur, who does not breathe evenly throughout the year, does not flood them out during the next high-water period, a giant pillow of sand, six meters high, was piled up under them. The sand was taken, understandably enough, right from the Amur, by dredges. And what did such an idea cost you and me? Well, somehow we survived these expenditures, once again stretching the blanket from one tear to the other. But you see, for the fish, the increased turbidity of the river water owing to the extended period of work by the powerful machinery, which "devoured" the bottom, means only one thing—disappearance. This turbidity is even capable of stopping the schools of salmon migrating upstream for spawning.

Our mailed fist which holds supreme power in the Far East has become stronger by two plants. But for some reason we do not experience a feeling of pride because of this. And why? Well, because things have not gotten better for the people who live in this wounded region and severely ill city, but worse. Two more plants have been added to the 30 giant poisoner-plants—that is how the Komsomolskites see the new success of industrialization. And you see, from the air alone, each of them receives 730 kilograms of poisonous substances per year.

One can see a great deal from the hill above the city. Right under our feet, on the left is a sulphuric acid plant. For many of us it was the first time we had ever seen pure sulphur: giant yellow mountains; thousands of tons—under the open sky. From our childhood fairy tales one remembers that a smell of sulphur accompanies the forces of darkness. And from hence this force flows into the ground, the river, and into man in its evil streams. Further to the right the Komsomolsk giant Amurstal emits a blue-grey smog with varicolored smokes, licking up what remains of the oxygen over the city with four immense tongues. If you turn to one side, the "air" has a

murky light-blue hue; to the other, murky brown. This hill is a kind of air-divider for the city. When the wind is from the north, it seemingly "fends off" from above the discharges of the plants in the northern part of Komsomolsk, providing at least some relief to the citizens of the other half of the city: they have only the clouds of smoke from "their own" plants left. When the wind is from the south, although the "northern" Komsomol'kites can also see the tops of the clouds of blowing smoke because of the natural "air-elevator," at least they do not breathe them in directly, and have to "get along" with their own. It is worse during a calm, when all this gets mixed together and devours the entire city. And the people began to speak out in defense of this hill, which has gradually been excavated for stone (which is very tempting, and "economical"—you don't have to haul it in from outside; just take what is underfoot). The authorities have promised to preserve the hill, but we ourselves saw fresh traces of excavation.

Abandoning such a favorable observation point, we shall single out still another of the city's multitude of problems visible from the hill. The city, which was established on involuntary labor, to a significant extent exists on it even now. In the lake of smog beneath our feet, we could distinguish three "zones," and in the smoky depths there are more that cannot be seen. Industrial facilities are fenced in with several rows of barbed-wire fences; the gates are closed and the living quarters are empty. Smoke curls out of the chimneys, and something is manufactured there, and there is not a single lounger on the territory. Such are the technological "conveniences."

How many prisoners are forging our economic might in the Far Eastern "outpost," they of course did not tell us. However, the following figure is well known: with, on the whole, a stable number of 320,000 citizens of Komsomolsk, every year up to 15,000 "chemists" gather in the city (that is what they arbitrarily call the convicts and prisoners who are given conditional early release, and who are obliged to work out their remaining "term" in a designated place—not, of course in the most healthy kind of production; and only after this are they finally set free: Are they voluntary slaves or involuntary freemen? [volnyye nevolniki ili nevolnyye volniki]). Therefore it would not be an exaggeration to state that Komsomolsk-na-Amure is—a "city of colonists." For its entire history. In a strange manner two different concepts have come together here: a colony as a *territory of enslavement* and a colony as a *method of enslavement (a corrective-labor colony)*. Of course there are many people here who have lived in the city for decades and truly love it. But, as they say, this is the kind of place to which "one could not be enticed for all the tea in China." Yes, they pay "northern" supplements here. But we would not want anyone to work under a delusion. It turns out that if they were taken away, the fixed wages of the local laborers would be noticeably lower than in the European zone for similar jobs. Such supplements have also been introduced for hard-to-reach regions, where all the necessities of life are hard to get, hence the prices of goods and services increase. But what kind of prices can one speak of, if the city is supplied at only 50 per cent of the proper level for most goods? After all, for goods in short supply we pay three or even ten times as much. For this reason "northern" supplements make little difference.

And so the city's industry is maintained to a significant extent at the expense of those to whom fate gave no other choice. Hence, the increased migration of the populace; or to put it more precisely, using our new parliamentary language, "rotation": having "served out" one's term in "chemistry," one may move away, and they will send new ones. They have no roots, no feeling of ownership or responsibility, no desire to warm and caress with one's own hands the land that feeds you. Hence—the terrible crime rate, the endless torments of waiting at night for one's dear ones who are late; hence the psychological shock from news of new unmotivated brutal group murders, which from time to time shake the town.

Anything, even a small thing, becomes a symbol when it contains all the principal attributes of a large and complex phenomenon. Komsomolsk-na-Amure is a living symbol of the System from which we are even now beginning to tear away, losing large chunks of living flesh in the process. But it is not all that easy to get rid of it. An example: Gorbachev's trip to the Far East caused a fit of perestroika among the local technocratic bureaucracy, which spilled out in the form of a "Long-term State Program for Comprehensive Development of the Productive Forces of the Far Eastern Region." According to the program it is planned to build right at 122 new plants in Khabarovskiy Kray alone. But just where are they to get the manpower for such projects? Why, from the place they got them before. Under former Kraykom First Secretary Comrade Chernyy, a plan to establish nearly two dozen additional "zones" in the kray had matured. They even began to build them. But then the kray's leadership changed. And the "Long-term Program" has somehow run out of steam all by itself, because of its complete impracticability; thus, confusion reigns on the banks of the Amur: to build "them" or to wait awhile?

And so, let us come down from the heights into the lake of smog; let us talk with the people; and let us learn just how they live, what their complaints are, and what bothers them most of all in contemporary Komsomolsk. We must honestly admit that never before had the work of the YUNOST expedition been so well-organized as it had in this region. The leaders of the social-ecological movement in the city and the Committee for Assistance to Perestroyka (chiefly, Sergey Ukhakov, a worker at the Gagarin Plant; Georgiy Kaskinin, a worker in the lead complex; Aleksei Trubnikov, DK [Dom kultury - Palace of Culture] deputy director, and others) had not only mobilized the activists in the working collectives in time to gather the necessary information, and had planned the work of the expedition precisely (right down to the hour), they also provided for its financing and for renting a helicopter, a boat, and transport for moving around in this vast territory.

When the state environmental protection organs begin to display even a small portion of such energy and efficiency, and the desire to overcome the multitude of problems, only then will a real first step be taken away from the brink of ecological catastrophe on which the country is now teetering in the kray.

Komsomolskites demonstrated their attitude toward the city's ecological disaster by supporting the unequivocal victory of V.M. Desyatov in the elections for USSR People's Deputy. Vladimir Mikhaylovich is loved by the local populace to the same extent he is hated by the local bureaucracy—precisely because of his many years of uncompromising struggle for the protection of the environment. He is now a member of the USSR Supreme Soviet Committee on Questions of the Ecology and Rational Use of Natural Resources, and owing to his effective actions on the committee, he has not allowed the hopes of his fellow-countrymen for their restoration to be dashed.

And so, how has the country paid for the heroic feats and torments of Komsomolsk-na-Amure? Almost 100 per cent of the city's industrial production is in the hands of—national ministries. The "city of the dawn" is providing the Powers with aviation and military technology, ships, steel, petroleum and chemical products, electrical equipment, lumber and so on. And what does it receive in exchange?

[Desyatov] "According to numerous indicators, our city has become the leader of the all-union 'black list.' We occupy first place in terms of the level of dust in the ambient air (exceeding the norms 12 to 30-fold); first place in contaminating the environment with lead (up to 50-fold); second in discharges of formaldehyde (3.5-fold)—and this substance is among the most dangerous carcinogens—moreover, it possess genetic mutation and nerve-paralysis properties. We are in fifth place for phenol (13-fold), and among the group of 'leaders' in terms of sulfuric anhydrites, nitrous oxides and many other poisonous substances. And so it turns out that in a city in the Taiga—there is no fresh air. It stands on one of the most magnificent rivers in the world, but cannot solve its problems with water purity. The city takes four-fifths of the water it uses, including drinking water, from the Amur. But in our region alone, 35,000 tons of contaminated, harmful and poisonous substances are being dumped into the Amur. Thus, their concentration in the Amur exceeds the acceptable limits by a factor of 24! Komsomolsk is 'sinning' on a broad scale—its annual discharge is capable of poisoning the flow of three rivers like the Amur. As a result, water which only tenyears ago was included in the highest category, today is—in fourth place. There are seven categories: the seventh means—the death of all living things. At the same time, the city's water-gate is located within the city limits. You can imagine what the people are drinking. It is naive to put one's trust in purification plants, for they are designed only for water of the first and highest category."

Here is how the conversation on this went with Comrade Datsko, chief of the city water management authority.

[Datsko] "When the purifiers are operating," he reported, "our water corresponds to the state standard [GOST], and we monitor it twice a month..."

[YUNOST] Excuse me, but what do you mean, "when they are operating"? Does that mean, that does not always happen?

[Datsko] "Since 1988 we have been in a position to purify water with reagents for only eight months; for the remaining four we are forced to filter only. There is an acute shortage in the country of aluminium oxide, for one. Our representatives have gone both to Gosplan and to Gosnab... There are only three such plants in the Union: one has shut down for repairs, and the others are now working feverishly."

[YUNOST] Then how can you pick up the chrome, the zinc and the heavy metals?

[Datsko] "For those four months there is no way. Because it is namely the aluminium oxide that "picks" them "up," as well as many others. What, indeed, does our river not carry? Not long ago so much alkali appeared in it that we no longer have to add alkali to the drinking water to bring it up to GOST standards... The only thing we can do is to hyperchlorinate the water."

Did I make the situation clear, reader? We advise everyone to conduct inquiries in their own cities—just how many months a year are they purifying your water?

For the inquiry: with the sanction of the USSR Ministry of Health, the norm for chlorination may be exceeded twofold, which is called hyperchlorination. But at the same time, our native science has not yet learned what forms in the water upon combining chlorine with other elements. This has already been done in the West. In many countries, chlorination is forbidden, because chlorine compounds form carcinogens and mutagens; and combination with any metals produces oxides which are dangerous to one's health.

How have we come to put our faith in various GOST standards, norms and allowable concentrations? Specialists have various attitudes toward them. Here is the opinion of [Dr.] S.I. Baklushina, acting chief physician at the city SES [Sanitary-Epidemiological Station]:

"Hyperchlorination is used in order to avoid bacterial contamination. Which is the more dangerous, the chlorine or the bacteria, remains to be seen. However, the GOST has, for example, no indicator for viruses. Thus, there are frequent outbreaks of infectious hepatitis and other diseases. Our water-gates are sources of danger. A new one is also being built within the city limits. We have taken tests in this region, and have found manganese in the water exceeding the norms five-six fold. We posed the question to the planners—to guarantee removal of manganese. Litigation has been going on for two years, and they have not budged."

The city possesses two other water facilities: the mountain river Silinka, in which, according to the memory of the old-timers, they used to catch bushel-size huchen [Salmo hucho], tench, and spawning salmon; and Lake Mylki—which in the past was an earthly paradise for

fishermen and vacationers. After construction of an ore-dressing combine (GOK) on the upper Silinka and a city with a very ecological name, Solnechnyy [Sunny], the river has been receiving poisons that exceed the PDK [Maximum Allowable Concentration] by a factor of 30-40. In certain months the "sunny" GOK pours 150 above-norm doses of copper and 90 of zinc into the Amur via the Silinka. Lake Mylki long ago ceased to be a paradise for fish and for people because 14 city enterprises are defecating into it, and petroleum products alone in it exceed the norm by a factor of 130. Incidentally, the basic city water gate is located below the water outlet from the lake into the Amur, and thus allows all these PDK's to pass through it.

And now let us trace the circulation of water in the natural environment of the city of Komsomolsk. The city draws from the river, channels the water through the enterprises, as well as the baths and the citizen's spigots, arbitrarily treats only one-third of that used, and spits out the remaining filth into the Silinka, the Mylki—and that means, into the Amur—and once again draws it out. Let us try to answer the question: Where is a Komsomolite to find clean drinking water, or to bathe, without risking a dose of an unidentified poison? The answer: In the city—nowhere! In a way it is also bad for motor vehicles: for 70,000 vehicles there is not a single auto-wash. Although there is—the Amur, and that means, one's own bathhouse.

[Desyatov] "It was precisely the factor of the extremely severe pollution of the environment in which we live that was the cause of the explosive growth of sickness in the city. We can, apparently, already speak in terms of a disaster. In comparison with 1986 alone, one can observe a jump in chronic pathologies among the most susceptible part of the populace—the teenagers [podrostok], both young men and young women. Testifying to the absolute number of pathological conditions is the following sequence: first place—mental disorders; second (!)—mild congenital retardation [debilnost]; third—neuroses, after which come gastritis, liver and bile-duct ailments, nephritis, eczema and dermatitis. Certain of these pathologies exceed the nationwide level threefold. A crushing blow has been dealt to heredity: an increasing percentage of newborns are dying from birth defects; in terms of the infant mortality rate, this means—one out of five. Medical personnel confirm that the reason is—the pollution of the ambient environment, and the extensive use of pesticides and toxic chemicals. Since 1983 the proportion of those dying from pediatric illnesses (in the first hours and days of life) has grown (from 32 to 53 per cent). This is primarily associated with living and working conditions, and with nourishment and the level of sanitation. Just think: the number of newborns suffering from cancer has doubled."

Cancer has gripped the city. Once again, leadership: first place in Khabarovskiy Kray. This cruel disease is living free and easy in our country. Cancer—is in a zone of silence; until recently it was—Do Not Disturb! As if it did not exist at all.

L.A. Churilova is a department chief in the city oncology dispensary. She is convinced that the growth in the oncological disaster is directly connected with the ecological situation.

[Churilova] "To this day one hears the opinion that only the health care system is to blame for the growth in the disease rate: They are doing a poor job, they say, in organizing the lowering of the indicators. Is that not why medical institutions are instructed: Do not speak about the poor material-technical base, or about the disastrous situation with funds, equipment and so on? Physicians have been forced to distort the true situation

"When I encountered the annual reports, it seemed as if they were fictitious. I had to re-calculate the data on our oncology services for ten years, myself. I was horrified. It revealed a significant increase in the disease rate. It is ordinarily calculated per 100,000 population, but if it were recalculated for adults only, the figures would be catastrophic. Even by the accepted method, for a ten-year period we have an increase in the number of patients from 206 per 100,000 in 1978 to 274 in 1988, while the average indicator for the region is 224. Cancer in our city has "gotten younger" by 15-20 years. In the past, lung cancer was considered the destiny of the 70-year-olds. Right now the "norm" is considered 40-45 years, but cases of the disease among men 32-34 years old are not unusual. Pulmonary forms are in first place among us; second place goes to stomach cancer; third place, to cancer of the gastrointestinal tract: that is, the organs that are directly associated with the environment, and which depend upon its condition.

In our city nothing is being done in order that the level of oncological diseases goes down. One could also put it as follows: everything is being done in order that it will increase. By criminal thoughtlessness, the city's oncology dispensary is situated in the epicenter of the industrial zone. Cancer patients lie on their hospital beds and gasp for breath from the dust and the discharges, and they cannot sleep because of the noise of the trucks: two main highways pass within 7-15 meters on both sides. It is not even possible to listen to the patients' hearts and lungs in the ward. Fifteen years ago a decision was made to move the dispensary. How many new plants have been built in that time, but not a single ruble was spent to help the suffering."

Of course, the citizens of the Amur basin are also to blame for the ecological situation that has come to pass. Too often their attitude toward it was unscrupulous. But the main thing is not their guilt, but the fact that no one has ever paid attention to their opinion; thus, they have learned to keep silent about whatever madness they see. Just as all of us. But after all, there are still state organs, whose duty it is—to protect the purity of man's habitat and to preserve the environment: SES [Sanitary Epidemiological Station] and Goskompriroda [State Committee for Environmental Protection]. Or do they not count at all?

[Baklushina] "There is no sanitary legislation in the country to this day; and that means that SES is in the position of a boxer with his hands bound. The damage to the human habitat is reckoned in the tens of millions of rubles, but the fine which we may impose for punishment is limited to—30 rubles. Over the past year 1,400 fines were imposed, which provided more than 40,000 rubles to the treasury. Whether this is a lot or a little we will not speculate—the city does not receive them anyway. Our sole effective measure is—closing enterprises, and we do have a regional environmental protection procuracy.

"Well, we submitted a resolution on closing the Electrical Equipment Plant. Immediately telegrams began to pour in from the government. Everything was as usual—promises, bribes, only do not close the plant—the plan, the plan. But you know, we've become so tired of waiting for the "bright" future which the ministries are promising that we have stopped reacting to their messages and the conclusions of commissions. The times are changing; therefore we hope to close the plant anyway. And just five or so years ago the first ones who began to put pressure on us when we had taken the decision to halt production, were our own ispolkom and party gorkom. Now they do not resort to such measures, but we have not received any additional rights from this. They have sought out money for moving the ETZ [Electrical Equipment Plant], but there is no one to build it: not a single construction organization will accept the job in their plan; they are all over-loaded. The eternal dilemma.

But then, they built the Hot-reduction Metallurgy Plant rapidly: the decision was taken in 1981, and in 1985 the first complex was put into operation. Why do we struggle to build only that which is exceptionally dangerous? The SES categorically objected to situating it close to a residential housing district, without a sanitary-protective zone. The kray SES also refused to consent, but construction on the uncoordinated project was completed anyway. In 1986 SES refused to sign the acceptance document for the next complex—but it too is being put into operation. In 1988 (Is perestroika going on here or not?), we refused to consent to starting up the last complex of the plant, and once again we appear to have been beaten. Bureaucratic barriers have proven to be stronger than we are. But what is SES to them! Not a single representative of the local authorities is a member of the state acceptance committee, and it is as if it no longer exists here. And so, in the residential housing area, emissions from this plant have now exceeded the maximum allowable limits for nitrous oxides by a factor of six, phenol by a factor of seven, dust by a factor of 14; carbon monoxide by a factor of ten, and so on. We have somehow become accustomed to figures that exceed the maximum allowable concentration of harmful substances many-fold, but after all, the first word in PDK is—*maximum* [*predelnoj*]. What have our people done to deserve all this?

S.A. Kuzminykh, chairman of the City Committee for Environmental Protection, occupied his post as a result

of an election with an alternative candidate. He believes that the confidence of the people is extremely important for such committees, but this is clearly not enough.

[Kuzminykh] "Until the Law on Goskompriroda becomes a reality and the corresponding legal acts go into effect, there will be no legal basis for the committee's organs to examine cases on administrative liability for violation of environmental protection laws—until then the responsible officials who are to blame for the ecological disaster will continue to live free and easy while the environment and the people perish.

"But for now—in 1988, for example, we fined the city's chief polluter, the Amurstal Plant, 58,000 rubles. They paid up. Last year we fined them 65,000 rubles. Once again, they paid. These monies go into the state budget. And the budget is allocating more than 40 million rubles to the plant for reconstruction and for resolving the environmental protection problems. But the money is not being assimilated. It is much easier to deal with regular fines, which are in comparison, trifling. Thus, the people's money shifts from pocket to pocket, but the matter does not budge. And in this departmental game, Goskompriroda is assigned the role of a kind of lightning-rod for public indignation. But lightning-rods while they absorb the lightning, cannot, as everyone knows, affect the course of the storm. We need laws and means, and our committee is not even equipped with everything it needs; it has neither laboratory equipment, nor transportation. Our single source of "pride" is—we are the only ones in the city to have instruments for determining the content of automobile exhaust. But is that really our business? Every motor vehicle enterprise and all GAI [State Automobile Inspectorate] posts should have such equipment."

Poor, poor Goskompriroda. Honestly, when one comes into contact with this organization, one gets a bitter feeling of a kind of perplexity, combined with the irrepressible urge to quickly avert one's eyes: as if I had seen a child with a huge malformed head, a frail body and small cachectic hands and feet. It is a product of the genetic anomalies of the administrative system. Such a creature is already beyond cure. A new genus is needed. But this can be entrusted to only a healthy, vital force to popular rule.

The present committee was established by the resolutions of the CPSU Central Committee and USSR Council of Ministers of 1 July 1988. These resolutions stipulated transferring to the newly-formed organ the functions of comprehensive control over environmental protection activity, and state monitoring of the use and preservation of the lands, waters, atmosphere, animal world, and minerals.

"Comprehensive control" and "state monitoring"—what fabulous music to our ears, and we in turn, naively took the bait, and were touched—well, finally. However to paraphrase Mayakovskiy, "If a resolution is adopted that means it is necessary to someone." And in only two

months a new one appeared—"On Improving the Management of the Forestry Industry and the Lumber Industry." "Improving" consisted of the fact that functions analogous to Goskompriroda were bestowed upon Goskommles [State Committee for the Forestry Industry] (Comrade Isayev, A.S.) as well. In the localities, where there still are forests, people have been in a quandary since the resolutions. How can it be: one and the same government, in different resolutions, has authorized two departments to do something, which to one of them is contradictory. One gets the impression that we have a lot of departments, and not much to do, but you have to keep them busy. Actually the situation is much more interesting: "They have put the cat in charge of guarding the cream." To clarify: as a result of this "improvement" in Khabarovsk Krai alone 50 per cent of forestry matters (that is, that of the foresters—the guardians and mentors of the forest) have been transferred to the subordination enterprises (that is, to the destroyers of the forest). Here is a riddle for MURZILKA [illustrated children's magazine] readers: Will we have less forest or more, if Uncle Forester is under the thumb of Uncle Lumberjack? For those who have not solved the riddle, here is a clue from Khabarovsk Environmental Protection Procurator V.I. Parshikov: "Control over the rational use of forest resources has become much worse."

Other departments were not born yesterday either, and they lopped off whatever they could from the feeble offspring. Minrybkhоз [Ministry of the Fishery Industry], for example, gave up monitoring the natural habitat for fish stocks, but kept for itself monitoring the fish themselves. They fish a bit and fish some more, and then they monitor a bit; and then they fish some more and then monitor some more, just how much they caught there and how many are left. There are fewer fish, but the bonuses for monitoring are larger. Minvodstroy [Ministry of Waterways Construction?] too monitors what it does itself.

As a result, instead of the single unified organ of control over the state of nature which was promised, we have 17, the majority of which "monitor" the results of their own destructive actions.

Man, outdoing himself, is prepared to sacrifice himself for the sake of—not his own at all, but the common, or simply someone else's welfare and life—is achieving heroic deeds. The heroes are innocent, but they have paid for their mistakes with interest. And the force which casts people into the crucible of heroic deeds not at all for the good of society, but merely for its own gratification and amusement—is a demonic and inhuman force. It deprives the heroes of the principal, the single reward—the sense of accomplishment, and its result. It is not the fallen and the maimed who need it; we need it, it is we that need the reward. The successors of those dark forces would like for us, the people of today, to wave at the heroes—Oh you fools, what have you done...

Yes, the seemingly inexhaustible wealth of the krai has been severely damaged, the ecological balance upset, and

traditions and human contacts distorted. But both the heroes and the victims are innocent. By denying their heroic deeds we would close the future to ourselves, and cut off, perhaps, the last living root that nourishes us. We must stop the general self-destruction of endlessly searching for the guilty among the zealots of the past. We alone are responsible for the present day and for the present condition of man and nature. We will not destroy the unknown materials of popular enthusiasm, because at its basis lies a thirst for a rational human life.

In Komsomolsk-na-Amure (Let us not forget that it is a symbol), the persistent folly and inhuman exploitation bent and twisted this enthusiasm, as they tried to press it into the ground—but it took on the unbelievable strength of a spiral. The System no longer has the strength to continue to apply pressure. A great deal of power is concentrated in this spring. And there are no grounds to fear that it will go in the direction of destruction. Only it, as it straightens, will be able to stop the process of degradation of man, nature and the economy. That means, once again, a heroic deed. But this time without a demonic smirk behind one's back.

In the next issue you may read the continuation of the material on "Spiral Podviga" [A Spiral of Heroic Deeds]: 2. Chelovek i energiya [Man and Energy] (about the problems of the Far East Atomic Power Plant and the Nanay nation); and 3. Skolko stoit les i reka [How Much Does a Forest and a River Cost?] (How many years does the Taiga have to live and why are there no longer fish in the Amur).

Trustees of the expedition: the Moscow cooperatives Sayat-Nova and Farkhad, the working collectives of Komsomolsk-na-Amure, and the Evoron settlement.

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Activist Updates Efforts To Clean Up Kazakhstan's Lake Balkhash

90WNO256B Alma-Ata KAZAKHSTANSKYI PRAVDA in Russian 28 Jul 90 p 3

[Interview with Anuar Turlybekovich Alimzhanov by M. Makulbekov: "Lake Balkhash: An Optimistic Tragedy"]

[Text] A lake is in trouble. It is getting shallower and more polluted. Ecologists and inhabitants of the area around Lake Balkhash are concerned. This uneasiness about the fate of Lake Balkhash has been expressed in newspapers and on television. Even the academic publication "Geograficheskiy entsiklopedicheskiy slovar" [Encyclopedic Dictionary of Geography] warns: "An increase in water withdrawals for irrigation systems in the Ili River basin threatens to increase salinity and reduce water levels..."

Writers and public organizations in the republic have joined the struggle to save the lake. For two years in a row there have been round table meetings in Alma-Ata at the

initiative of the Kazakh Committee for the Protection of the World. The participants at the last meeting—writers and scientists from various countries, adherents of the International Baykal Movement—decided to declare Lakes Balkhash and Biwa (Japan) unique. Among their siblings are bodies of water such as the Aral Sea, Lake Baykal, Sevan, and Khubsugul.

In the final document of the round table, which was published in KAZAKHSTANSKAYA PRAVDA on 23 July 1989, writers from Japan, the United States, Mongolia, and the USSR called upon intellectuals from all countries to struggle together to save rivers and lakes. What has been done since then? Did the alarm sounded by the literati have an effect upon Lake Balkhash? These and other questions are answered by the writer Anuar Alimzhanov, chairman of the Kazakh Committee for the Protection of the World [Kazakhskiy komitet zashchity mira], a Kazakh SSR people's deputy and winner of the J. Nehru Prize and the People's Republic of the Congo Prize.

[M. Makulbekov] Anuar Turlybekovich, make it clear to us right away why the Committee for the Protection of the World is engaged in ecological problems.

[Anuar Alimzhanov] The word "World" has many meanings. While in the recent past the main threat to humanity was the stand off between NATO and the Warsaw Pact, today, when the thinking of politicians and peoples has been demilitarized, the greatest danger comes from various ecological catastrophes taking place before our very eyes. These include rising atmospheric temperatures due to the greenhouse effect caused by increased carbon dioxide; the death of the Aral Sea, Chernobyl and the dried up nameless little stream that was the only nesting place for various rare birds. Nature is one, and therefore ecological calamities do not recognize administrative and state boundaries. So, today the struggle for the world is primarily the struggle for everything living on earth. In attempting to help Lake Balkhash our committee is engaged in a matter which concerns it directly.

[M. Makulbekov] What, in your opinion, must be done to save Lake Balkhash?

[Anuar Alimzhanov] Science and exact knowledge are needed. Unfortunately, today we are limited to meetings and appeals. Emotions undermine arguments. What if, under pressure from public opinion, the government decided to help Lake Balkhash? What could be done and where to begin? Not a single scientific institution in Kazakhstan has comprehensive data on Lake Balkhash. How badly is it polluted; what is the composition of the water in rivers flowing into it? There is a long list of such unanswered questions. I will give one fact to illustrate our unenlightened thickheadedness and the degree to which we have fallen out of civilized world society. Can you imagine a map of the USSR with only one blue spot—Lake Baykal? Wouldn't that be strange? However, to our shame, there is such a map. It is in the encyclopedia "Ozera mira" [Lakes of the World]. This book

does not include the Aral Sea, Lake Balkhash, Kurgalzhino, Ladoga or other bodies of water. This is because nobody has seriously studied them. But as for Lake Baykal—every cloud has a silver lining. In saving that lake from pollution and death, Valentin Rasputin and other writers challenged powerful all-union agencies that are destroying nature without even thinking about it. The problem of Baykal attracted the attention of the public and of scientists. An institute was created. It is now studying the lake's history, flora and fauna. A huge amount of work has been done by G. I. Galazi, doctor of biology, correspondent member of the USSR Academy of Sciences and a very prominent Soviet ecologist. He has written several books about Lake Baykal that summarize data from numerous studies and from other sources. This made it possible to include the lake in the encyclopedia.

Here in our republic we do not have a single limnology institute, even though Kazakhstan can truly be called the republic of lakes. There is no such institute in the entire country.

Incidentally, everybody knows that the reserves of fresh water on the planet are declining from year to year. The UN has even declared the current decade to be the "Drinking Water Decade", allocating huge sums to protect the purity of water sources on various continents. Under these conditions, where rivers and lakes in our country are being senselessly polluted, where springs are drying up, there is only one water research institute functioning in the USSR; it is somewhere near Kharkov.

[M. Makulbekov] Let us return to the problem of Lake Balkhash. Have there been changes?

[Anuar Alimzhanov] From 7 to 15 July of this year a group of Japanese scientists worked in Kazakhstan. They came at the invitation of the Kazakh Committee for the Protection of the World and did a great deal of work at Balkhash and the Aral Sea. I stress that they came at their own expense, with their own equipment. We do not have such items. Norio Osida, Iosihiro Fukushima and Kazuo Nisimura are scientists from Kyoto University. They are senior associates at the Limnology Institute at Lake Biwa. Sashiko Yasuda, a journalist covering ecological issues, worked with them. They took many samples of the shore and bottom, and of water from Balkhash, Kapchagay, the Lepsy, Aksu and other rivers flowing into the lake. They flew by helicopter to the most inaccessible places. In short, they worked unstintingly. This is their attitude towards their work and towards life. Later we went to the Aral Sea. In three days we flew almost completely around it and visited Barsa-Kelmes Island.

The Japanese themselves expect much from this expedition. They took their samples with them and are now studying them. They will give us the results from their studies and their recommendations. Also, the study of Lake Balkhash and the Aral Sea will make it possible to include them in the encyclopedia "Lakes of the World."

This means that the calamities around Lake Balkhash and the Aral Sea will attract the attention of ecologists from other countries. Obviously, this will help us.

[M. Makulbekov] Why did you request help from the Japanese?

[Anuar Alimzhanov] For many reasons. Primarily because all possibilities must be included in the calculations. We have long-standing creative ties and personal acquaintances with Japanese writers—Hirosi Noma, Yukio Kurikhara, Nobuyuki Nakomoto, Yasuki Fukushima and many others. Among them are active participants in the ecological forums concerning Lakes Baykal, Sevan and Biwa conducted regularly under the aegis of the International Baykal Movement. These writers' prestige helped us get in contact with Japanese scientists. Also, Japan is considered a progressive country with regard to the protection of nature, ecological education and its contribution to science. Finally, they have the best equipment. Valentin Rasputin and I were convinced of this at a forum on Biwa Lake. The boat we were on had fantastic equipment. As the boat moved along the captain commented upon the data that appeared and disappeared on a computer screen; data on water temperature at various depths, on currents, salinity, biological and chemical pollution and the condition of the bottom. In my opinion the lake water was very clean, but the Japanese have different standards.

(Note: "Biwa, the largest lake in Japan, is on the island of Honshu. Its surface area is 716 square kilometers and its maximum depth is 86 meters." ("Encyclopedic Dictionary of Geography")

Incidentally, this lake once suffered a great deal from the wastes of civilization. It was saved by housewives.

[M. Makulbekov] ?!

[Anuar Alimzhanov] Yes. Numerous enterprises owned by the largest companies in Japan are located around the lake. Initially the owners were not concerned about the ecological purity of production operations. The local inhabitants and tourists were not much different from ours. However, as time went on the fish started to disappear and people started getting ill; the lake was dying. Then the women took action. Holding hands, they formed a human chain around the lake, making it known that they would protect it and in the process save their families and lives. Housewives refused to use detergents. Synthetic detergent are the number one enemy of water. They switched to soap. They saw to it that not a drop of fat or food waste was dumped into the lake. The struggle to save Lake Biwa heated up, with scientists, writers and the public becoming involved. Pressure was put upon enterprise managers. Industrial wastes stopped poisoning the lake. It turned out to be capable of cleaning itself.

Americans used the same method to save Lake Michigan. I was in Chicago in 1976. The lake's waters were very dirty. Two years ago the inhabitants of Hammond

(which is also on Lake Michigan) proudly announced the rebirth of the lake. A "Green" front disseminated propaganda among the population, while companies allocated equipment and resources. The inhabitants of the state started to monitor the rivers flowing into the lake.

[M. Makulbekov] Anuar Turlybekovich, you obviously have a goal in mind when you give these examples.

[Anuar Alimzhanov] Of course. Without ecological education of adults and children and without the population having elementary knowledge about these matters nobody and nothing can save Lake Balkhash. Governmental decrees and scientific research cannot save the lake. Each of the almost 3 million citizens of Kazakhstan who use waters from Lake Balkhash and the rivers pouring into it should have a sense of self-preservation. I am not afraid of being banal and repeating the truth: Water is life.

Today sovkhoz and kolkhoz fields come right up to the banks of the Ili River. Herbicides, pesticides, mineral and organic fertilizers enter the river and flow into the lake. Vehicles are washed in the river. Sheep are bathed right next to the Ili. All this enters the lake in an endless flow. As is known from school geography texts the lake has no outlet. The lake cannot clean itself; the giant of the steppe does not have the strength for that. The situation is made a hundred times more serious by the city of Balkhash, a center for nonferrous metallurgy in the republic, being located on the north shore. In spite of an indignant public, industrial wastes from the mining and metallurgical combine continue to pollute the long-suffering lake.

Also, the lake level is declining. This is due to the Kapchagay GES [Hydroelectric Power Station] and Reservoir. Thanks to nature, this year the lake level increased somewhat, but the water was no cleaner! The pike-perch [*Lutioperca sandraCuv.*] are suffering from disease. The sick fish are caught, processed into mixed feed and fed to livestock. So, the filth comes to our table.

Many people have no idea of how important the waters of Lake Balkhash are to Kazakhstan. This is an invaluable gift of nature! Dozens of rivers that started in the Dzhungarskiy and Zailiyskiy Altay Mountains flow into the lake. This is the purest drinking water; it must be cherished as the apple of one's eye.

[M. Makulbekov] Well, good. Let us assume that economic managers and the public understand this. What about the government and parliament of the republic? How can they be cause for encouragement?

[Anuar Alimzhanov] I think that the republic's leaders are as concerned as we are about the fate of Balkhash. But permit me to ask, to what program can they allocate resources to save the lake if not a single scientific institution in Kazakhstan has data on its pollution, salinity and on the composition of river waters pouring

into it? As I have already mentioned, it is only now, with the help of foreign scientists, that we can hope to obtain the first information.

There is one thing that the government and parliament could do to immediately help—halt the construction of the Southern Kazakhstan GRES [State Regional Electric Power Station] on the lake's west shore; on a peninsula, one could say. At the last session of the Kazakh SSR Supreme Soviet I put this question to the chairman of the committee in charge of environmental protection: Will the construction of the power plant continue? He answered negatively, saying that the project had been frozen. In fact, it turns out that the GRES project is going full speed ahead. If this senselessness does not cease, then catastrophe is inevitable. I am confident that reason will triumph.

Also, I have to admit that we were not entirely truthful with our Japanese friends who, at the first request, came to help us as friends. We did not show them the GRES. We were afraid that they would be disillusioned and consider the study of the lake to be a waste of effort. Why attempt to save it if it is being deliberately and clearly doomed to death?

[M. Makulbekov] So, can one summarize our discussion by saying that it is necessary to consolidate all forces—science, the authorities and public awareness of those living around Balkhash?

[Anuar Alimzhanov] I will add one more—the mass media.

We must begin with science. It is necessary to open up a Limnology Institute in Kazakhstan (I repeat, we have many lakes) and to train specialists. Scientists from Japan are assisting the Baykal Institute. I can assure you that they will provide equipment free of charge. Also, it is necessary to coordinate the actions of the republic supreme soviet, the State Environmental Protection Committee and of ministries and departments. We need scientific assistance from other countries. On our part, and I mean the Kazakh Committee for the Protection of the World, writers in the republic and the Baykal Movement, hope to soon give the government scientific data on the extent of the lake's misfortunes and recommendations to prevent an ecological catastrophe in and around Lake Balkhash. It remains to be added that the struggle for water quality, for saving dying lakes and rivers should not be turned into a campaign, into a one month push. Diligent work by scientists and ecological education in school and industry should be come a norm of life.

Irrigation Predisposes to Mudflows in Turkmenia

PM1209155390 Moscow *PRAVDA* in Russian
11 Sep 90 Second Edition p 2

[Correspondent M. Volkov report under the rubric "Details" "Mudflow Has Spread"]

[Text] Ashkhabad, 10 Sep—Mudflows have inflicted blow after blow on the narrow strip of the cultivated zone in western Turkmenia. There is a single cause—unprecedented downpours in the Kopet-Dag Mountains.

"Old-timers observed something similar a quarter-century ago," R. Kurbanov, chairman of Kizyl-Arvat City Soviet Executive Committee, told me. "True, the elements have proved mightier now. According to the government commission's preliminary estimates, the damage to the city and its environs totals 3 million rubles [R], and it will take approximately R10 million to eliminate the aftermath."

Reconstruction work is now in full swing. The highway was repaired literally in a matter of hours, and freight is once again traveling along it from the center of Turkmenia to the west and back. The republic has asked the USSR Government for assistance: Powerful excavators, bulldozers, trucks, and construction materials are needed.

It is necessary to draw conclusions. Particularly as mudflows and floods are not such a rarity in the Black Sands. Minor ones occurred both last year and the year before last. With the arrival here of the Karakum Canal, the irrigation of hundreds of thousands of hectares of land, and the discharge of drainage water deep into the desert, the climate has changed. Underground water has also risen high. Specialists recognize that all this has contributed to a considerable increase in the zone liable to mudflows and to more devastating consequences of mudflow "attacks."

More on Tashkent Metro Contamination, Illness Controversy

LD0609085990 Moscow Domestic Service in Russian
0330 GMT 6 Sep 90

[For previous reporting on this affair, see page 102 of the JPRS series ENVIRONMENTAL ISSUES, JPRS-TEN-90-011, dated 31 August 1990.]

[Text] A few days ago the television program "Vremya" reported an incident in the Tashkent Metro. There a new micro-organism had allegedly been discovered that causes a terrible illness. Our correspondent ask (Mikhail Ivanovich Markeyevich), head of the Main Epidemiological Directorate of the USSR Ministry of Health, to comment on this report.

[Markeyevich] The information reported was not precise. All that has been said does not correspond to the truth. Everything which took place in the subway is connected with the acute poisoning of personnel, train drivers, and staff who service these lines, and this was caused by chemical substances. Where did these substances come from in the subway tunnels? The fact is that there is a large factory situated next to this line. This enterprise has been very negligent regarding environmental protection. In particular, the waste waters—and they contain dozens of chemical substances—flowed through a drainage ditch in which there was no purification when it left the enterprise. It was in a bad state and the waste waters contaminated

with very many chemical substances—aromatic hydrocarbons, rare metals and many, many others—penetrated the soil. This situation built up, and the subway lines formed kind of dams for these waste waters, and when the waste waters rose with the floods, naturally there was nowhere for those chemical substances that had dissolved in the soil to go, and under pressure they penetrated [the metro tunnels] and caused poisoning.

Specialists, in particular those dealing with railway hygiene, that is from the Ministry of Railways, who came

specially to get to the bottom of this matter, provided visual proof of the reasons for what had happened. They discovered air in the tunnels containing many substances, in particular hydrogen sulphide, aromatic hydrocarbons, and many other substances exceeding by dozens of times the permissible concentrations. Therefore, the diagnosis made on personnel was acute combined poisoning with chemical substances. What was said in the interview with Professor Dekhkan-Khodzhayev^a does not in general correspond to the truth. There is no proof of her statement.

DENMARK**Industry Eager for Environmental Technology Exports to East**

90WN0225A Copenhagen BERLINGSKE TIDENDE in Danish 25 Jul 90 p II 8

[Article by Charlotte Kiberg: "Denmark Prepared for Big Environment Export"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] An enormous market for environmental technology is just sitting there waiting for Denmark. However, it is not enough for just the large companies to do the research needed to make themselves more competent. The small companies must begin to do so as well, perhaps through cooperative efforts, according to the Committee on Industry and Trade.

Denmark has what it takes to assume a truly major role in the development and export of environmental technology. Because our environmental laws are so strict—and keep getting stricter—our manufacturers are forced to continually improve their technologies. A few large Danish manufacturers invest millions in this field every year, placing us in the forefront internationally.

"Up until now we have actually been almost too capable, and our technology is cleaner than what is required in many countries. However, environmental regulations are now becoming stricter, creating a demand for Danish knowhow," says Committee on Industry and Trade technical engineer Jorgen Paulsen.

Few Research Tools in Environmental Technology

"The Swedes and West Germans may be up there too, but Denmark is the absolute leader in clean environmental technology. We should exploit this fact. A big market is waiting for us, if we can capture it—and not least in Eastern Europe. However, it will be necessary for our smaller manufacturers to get out of the starting gate as well. Those manufacturers who only produce components must ally themselves with the larger companies, both to obtain the funds for research, but also to allow us to offer an overall program, which is equally important," he says.

The resources available to the Committee on Industry and Trade to support businesses doing research in or developing environmental technology have been cut back significantly, and today they support only two industrial cooperative projects, providing a total of approximately 120 million kroner in startup support. Outside of EC support, the only other source of assistance is the Environment Committee's funds for cleaner technology and recycling, sources of 230 and 300 million kroner, respectively, spread over three years.

"It is extremely unfortunate that support is being cut just now. There goes the carrot that was being dangled before the medium-sized companies," says Jorgen Paulsen.

The Academy of Technical Sciences has recently conducted a study of whom is involved in environmental technology research, and they found that research and development are being conducted only by the large Danish companies. Half of the total research effort in Denmark is attributable to 90 companies, all of whom have more than 500 employees. These 90 companies comprise less than one per cent of the total number of companies in Denmark.

Companies Spent 187 Million Kroner on Research

Every two years the Research Directorate sends a questionnaire to Danish businesses to determine how much money they are spending on research. Their data indicate that 187 million kroner in private funds was spent in 1987 on research and development in environmental technology.

FLS Miljo in Valby, Volund Miljoteknik in Brondby and I. Kruger from Søborg, all of which are located in the Copenhagen area, are Denmark's heavyweights with respect to air, waste burning and sewage treatment cleanup. They understand the importance of intensive research—and they have the money to conduct it.

Volund Will Gladly Do More Research

Volund Miljoteknik invests 2.5 million kroner in research each year. The firm would gladly do more research, but the domestic market is too small to bear the costs.

Volund Miljoteknik is among the leading companies in the world in the field of waste burning technology. The company has captured approximately 20 percent of the world market, with sales in excess of one quarter billion kroner. Of these sales, approximately 80 million derive from branches in the United States and France. Half of the Danish business comes from exports to Sweden, Norway, India, Japan, and Russia.

"This year we have committed two and one-half million kroner to research. Perhaps that doesn't sound like so much, but one must also consider the development which is ongoing as we work on new orders," says Director Mogens Rasmussen.

"We have an average of seven or eight plants under development at a time, and different demands are made every time a customer calls. Five out of 104 Danish employees are fulltime researchers," he adds.

"We would gladly do even more research, but we have the same problem as most other Danish companies: our domestic market is too small to bear the costs. Consequently, we cannot make a big investment, and we have to test anything completely new from the ground up. We are forced to develop as we go instead. This can lead to catastrophe in our competition with the major foreign companies," he says.

Volund Miljoteknik presently has a patent application pending which remains very secret. However, Mogens

Rasmussen is willing to say that the invention involves a significant improvement in slag quality.

"Our slag is already so well burned up that here in Denmark we have to use some of it for landfill, dams, and embankments. However, there is so much that some of it still goes to the dump, and secondly, this is only a Danish law. Even better burning will allow us to use slag for purposes such as road surfacing."

Five years ago we built a plant in Florida, where the groundwater level is high, making it very difficult to find dumping sites. Initially they took our plant because the slag could be reused, but as the regulations over there became stricter, our slag wound up smoking on the dumps as dangerous waste material all the same. Our pending patent is so thorough that even Florida will be able to reuse the slag now," the director reveals.

Social Democrats Would Use Pollution Fines For East Europe

90WN0269A Copenhagen INFORMATION in Danish
23 Jul 90 p 1

[Article by Lene Froslev: "Social Democrats Would Force Government To Introduce Environmental Fees Worth At Least 100 Million"]

[Text] Fines on companies that are particularly heavy polluters, and water usage fees are being examined as possible sources of financing for environmental subsidies to East Europe.

Environmental fees totaling at least 100 million kroner may be expected in connection with the 1991 budget. Presumably, we may expect fees for water usage, and companies that are particularly heavy polluters may expect user fees, to cover the expenses incurred by public agencies that investigate the environmental impact of their activities.

The Social Democrats want to force the government to introduce environmental fees. Such fees were considered in the past, but they were never implemented because of internal differences within the government.

Environmental Support To East

Agreement has been reached on environmental subsidies for East Europe, which will be financed by environmental fees here at home. The agreement was reached this past spring and, as a result, 100 million kroner per year will be spent to clean up the environment in East European countries. The first 100 million kroner will be spent in 1991. A committee that will recommend how to spend the money has just been appointed.

The source of financing for the agreement has not yet been determined. This will be decided in conjunction with the budget negotiations this fall.

Jan Trojborg, environmental spokesman for the Social Democrats, told INFORMATION it was his understanding that there was an agreement with the environmental affairs minister to finance the project through the introduction of environmental fees.

"I cannot imagine that anything other than environmental fees would be considered as a source of financing," he said.

Fees And Water Taxes

Trobjborg said, however, that he was extremely flexible with regard to the types of fees that would be used.

First of all, however, the Social Democrats will recommend the introduction of fees for companies that are heavy polluters. This proposal was up for discussion last year and it was estimated then that it could provide revenues of 120 million kroner.

This measure never passed because of internal differences within the government.

The Social Democrats are also open to proposals concerning water usage fees. The government is also considering such a fee. INFORMATION learned

Trobjborg also believes that the government itself will propose a number of environmental fees during the budget negotiations, partly for reasons of the overall budget, and partly to improve the budget of the Environmental Affairs Ministry.

Nationwide Garbage Recycling Plan Advances

90WN0269B Copenhagen INFORMATION in Danish
23 Jul 90 p 7

[Article by Ebbe Sonderriis: "New System: Sanitation Workers Will Be Guardians Of Environment"]

[Text] Suddenly everyone agrees: We will sort our waste ourselves, before the sanitation worker comes. He or she will help us get going and we will separate our garbage, to avoid diseases from microorganisms and to recycle as much as possible.

There is much money and great economic interest in Denmark's garbage. After all, we are speaking of more than 1.7 million tons annually from households alone.

There are also significant health interests involved. Many people have become so ill from sorting other people's waste that they never have a normal day. The large mechanical sorting facilities in Skive, Odense, and Vejle, in particular, have been criticized.

Whether it was the money, the environment, or the health effects that caused the breakthrough—in any event, the experts from all camps came to an agreement this summer. The Environmental Protection Board, the municipalities, the unions, the Labor Inspection Agency, and industry agreed, to the surprise of everyone. And the Recycling Council has now begun drawing up plans

Everyone Will Sort

If everything goes well and political interests do not get in the way, we will all sort our waste into four categories in the future.

In the future, instead of using trash bags we will all use two containers on wheels. Each container will have two compartments.

Organic waste will go in one compartment, paper and cardboard in the second, glass and perhaps plastic in the third, and everything else in the fourth.

Apart from this are toxic waste and other problem substances. All municipalities are obliged to begin collecting these items on 1 January 1991. It has now been decided that special garbage trucks will be purchased for collecting garbage in the neighborhoods.

Environmental Guardians Of Society

Sanitation workers will be given a new role and new importance. They will be "guardians of the environment," who will be trained to help us sort our garbage properly.

This is actually a key role. If things go bad from the beginning, we will have diseases, waste, and economic problems later, when the waste is to be processed and reused.

"This is truly good news," said engineer Peter Jonsson of the Environmental Protection Board. He was "more and more speechless from surprise" when the Environmental Protection Board held an expert seminar on the future of "green systems" just before the summer vacation.

Mechanical Systems Abandoned

Now there will be no more isolated experiments, particularly with mechanical sorting facilities where microorganisms thrive and the employees suffer from asthma according to a proposal from the board's office for recycling and cleaner technology.

The idea was to combine forces—and finances—to create a so-called second-generation system.

In general, municipalities want to do it their own way, companies want to sell their own technology, agencies see their chance to obtain subsidies, and trade unions protest even before the work begins.

For this reason, the Environmental Protection Board was surprised when all sides finally declared that they were in agreement. Suddenly the battle was over.

Ingenious Solution

The environmental consultant for the sanitation workers, Ole Busck of SiD [Special Workers Union], has been one of the most energetic supporters of sorting at the source. He is excited and sees the new plan as a historic victory, both for the principle that we must

minimize waste and sort it at the source and for SiD's opposition to mechanical sorting devices, which cause diseases. These facilities now stand as "gravestones" over a misguided environmental policy, he said.

The most important thing is for people to take care of their waste themselves. Overall, however, he sees the plan as an ingenious solution that solves three problems at once:

"We will recycle the required two thirds of all household waste. We will solve the serious environmental problems caused by mechanical separation. At the same time, the plan is economically feasible."

Costs the Same

Peter Jonsson sees this matter as an example of how experts who know what they are talking about can reach agreement if they are free from external political pressure. He does not hide the fact, however, that economic interests also played an important role.

The new model is cost neutral. It will cost no more than the present system of trash collection, even though it will mean that two thirds of the household waste from a typical single-family dwelling can be recycled. Today only about one tenth is recycled, even though there are collection facilities for glass and paper and a number of experimental facilities in various municipalities.

One Collection Day Saved

The economic gain is not, as one might expect, in the sale of recyclable materials. This is small change in the overall picture, according to Peter Jonsson. The financial gain will come, among other things, from having one fewer trash collection days per month.

At present, the trash bags into which we throw everything together are collected once each week. Under the new system, one container (the one with organic material and "the rest") will be collected every other week. The other container, with paper and cardboard on one side and glass and plastic on the other, will be emptied every four weeks. Consequently garbage trucks, which in the future will be divided in half to keep the items separate, will save one trip every three weeks.

This is one of the things that will improve the wage and material accounts of municipal trash collection companies.

'Yes' to Better Work

But what do the sanitation workers say about this?

Surprisingly, they are just as happy as the association's environmental consultant. At the same time, sanitation workers will be given an entirely new role as environmental guardians. They will be thoroughly trained to instruct us and to make sure each classification of waste is as pure as possible.

If too many people sort their garbage incorrectly and if toxic substances and other problem waste end up in the wrong container, then the entire effect of improving the environment will be lost.

At the same time, the sanitation workers have seen the handwriting on the wall, according to Palle Nissen of the Copenhagen sanitation workers. "If we do not jump on the bandwagon now, we are in jeopardy of suffering the same fate as the typesetters and brewery workers. We have fought for and won better wages and working conditions, but we are in danger of being made superfluous by new technology, such as central suction facilities in new buildings, for example."

Proud of New Role

Peter Nissen freely admits that there was practically a lynch-mob mentality in the beginning, when he and others told the workers that they must give up their piece-work rates. That is the price that must be paid if the sanitation workers are to take their time, instruct and help us, and shift their emphasis from the speed to the quality of their work.

"But the workers can see for themselves that they will just wear themselves out if they collect garbage from twice as many locations each week as the number upon which their basic pay is based."

"The role of environmental guardians in society is one we can be proud of."

Thus, the sanitation workers have become one of the first groups that have specifically expressed interest in exchanging their wage demands for training and more meaningful work.

Training Needed Soon

"In addition, we will become more visible in society," Peter Nissen added. Some sanitation workers are already trained in various environmental specialties, such as septic tank cleaning, hospital waste, oil and chemical waste, and compostable waste."

"Now it is up to our association, SiD, to get moving so we can obtain the necessary training," Peter Nissen said.

Despite fine reports concerning the training, both from SiD and from LO [Federation of Trade Unions], the association is still lagging behind in this area, he said.

At present, there are about 6,000 sanitation workers throughout the country.

All Funding Collected

The parliamentary recycling plan is aiming at recycling 50 percent of all waste by the year 2000, while 40 to 50 percent of household waste will be recycled. Forty million kroner has been allocated for development work and 85 million to subsidize investments in construction.

These funds are being collected for a pilot project. In addition to the training, money must be invested in new container (240 liters each) garbage trucks that are divided into two sections, and facilities for receiving and processing the waste. It is expected that a medium-sized municipality will be selected for the first phase of the pilot project this fall. This experiment will continue for one year. Peter Jonsson believes that the project will begin on a nationwide basis in 1992.

Danish Jobs

The municipalities need not wait in the meantime, however. They can certainly proceed now, since they know what recycling system they must ultimately use, Peter Jonsson said.

It is said that two thirds of the waste in a typical area of single-family dwellings will be recycled, since greater difficulties and more losses are anticipated in less typical areas.

Even though some states in Germany have made significant strides in sorting waste at the source and in recycling, all the parties involved believe that developing the system and constructing receiving facilities, vehicles, containers, etc., will provide jobs in Denmark.

FEDERAL REPUBLIC OF GERMANY

Developments in Pollution Control Measures Noted

Infrared Detection System

90WN0185.4 Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 22 May 90 p 8

[Unattributed article: "Continuous Monitoring of Pollutants: Essen Process Uses Infrared Spectroscopy"]

[Text] Kiel, 21 May—Infrared spectroscopy is the basis of a new technique for measuring organic pollutants which was developed by the research team of Professor Dr. Bernhard Schrader at the Institute for Physical and Theoretical Chemistry of the University of Essen. The centerpiece of the new method is the continuous monitoring of waste water or exhaust air for such pollutants. Infrared spectroscopy has been widely used for a relatively long time in molecular analysis. The process is based on the property of vibration of molecules. These vibrations can now be observed using infrared technology. It is possible to detect specific compounds and to calculate their concentration.

Previously, monitoring of environmentally hazardous materials such as halogenated or aromatic compounds in cooling water, process water, and waste water was accomplished primarily through collection of samples for subsequent analysis in the laboratory. However, in modern production systems it has become increasingly necessary to monitor these materials continuously to

improve production and to trigger alarms immediately when established threshold values are exceeded.

According to the research team, the Essen system lends itself to this measurement since the measuring instruments have been successfully reduced in size and can now be more efficiently set up in the field at relevant testing sites. Additionally, the decentralized measuring instruments are considered well suited for connection to optic fiber lines. This variant is reportedly of interest because of the low transmission losses in the near infrared range even at distances of more than several kilometers. Finally, development of a new type of infrared measuring head has made expensive preparation of samples unnecessary. Detection thresholds have been lowered.

However, before the system could be put into practical use, the Essen scientists had to overcome a few obstacles. For example, one such problem was the water contained in the samples. Water itself has a strong infrared spectrum and can therefore significantly distort the measurements. This was particularly problematic because the pollutants in waste water assays are naturally present in aqueous solution. This obstacle was overcome by using a measurement variant which operates in a different spectral range where water no longer interferes.

Mobile Mass Spectrometer

90WN0185B Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 28 Jun 90 p 8

[Article by Joerg Baesecke: "On the Trail of Environmentally Hazardous Materials: Investigation of Dump Sites Using the Mass Spectrometer"]

[Text] Kiel, 27 Jun—In the cleanup of dump sites or in chemical accidents, soils contaminated with organic chemicals and hydrocarbons present difficulties. These materials are mobile in the soil and react relatively quickly with it. Consequently, it does not take long for organic chemicals and hydrocarbons to be uniformly distributed in the soil. In contrast, other less mobile materials appear in varying concentrations in the soil profile. To correctly assess soil contamination over large areas, analysts are forced to take thousands of samples. Then, these samples must be investigated as quickly and reliably as possible. The research team of scientist Prof. G. Matz of the Technical University of Hamburg-Harburg has concentrated on the problems of the investigation and analysis of dump sites. In cooperation with a Bremen company, several analytical methods have been developed on the basis of a mass spectrometer for mobile use.

The mass spectrometer with which these measurements are performed is specifically designed for mobile use on site. It operates even under extreme conditions and requires a 24-volt D.C. power supply. Using batteries, it

does not depend on the electric power network. Basically, the mass spectrometer permits detection of hazardous materials in soil, air, and water. In the case of organic substances in the air, the measurement range of the instrument extends into the ppb-range (parts per billion). Special probes enable analysis of very small quantities of organic substances in the air. But the device can also be used for investigation of soil samples from dump sites.

Using the mass spectrometer at the site of a former gasworks, it was possible to establish a spectrum of hazardous materials such as polycyclic aromatics and diphenylene oxide in drilled cores from various depths. In the area of an old hazardous materials disposal site, a similar analysis was performed on the soil atmosphere in drilled holes.

The instrument is also suitable for detection of health threatening additives in wood preservatives. In the past, pesticides which have now been classified as hazardous and banned were frequently added to wood preservatives. However, Old paints with wood preservatives which still contain pesticides are plentiful. Although the problem is not yet completely solved, the analytical instrument should be helpful. It detects the contaminants in question on site without great expense. To accomplish this, the heated probe of the device is placed in contact with the wood and the resultant vapor is analyzed. Along with its mobility, the major advantages of the mass spectrometer lie in the speed with which it detects environmentally hazardous materials.

Sewage System Improvements

90WN0185C Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 29 Jun 90 p 8

[Unattributed article: "Chemical Purification of All Sewage: DM140 Billion Investment Needed by the Sewage Industry"]

[Text] Frankfurt, 28 Jun—The German sewage industry will have to invest heavily over the next few years. President Klaus R. Imhoff of the Sewage Technology Association estimates the total investment needed at approximately DM140 billion. The main thrusts of investment are prevention of water pollution, the public sewer system, and water purification facilities.

To be able to eliminate the environmental gap between the GDR and the FRG, the GDR would need at least DM40 billion for prevention of water pollution, explained the president. The seriously polluted Elbe River would have to be central in these efforts.

The public sewer system in the FRG is 285,000 kilometers long. Of that, 15 percent must be considered damaged or leaking. These figures come from a study by the Sewage Technology Association in the FRG. The study further states that the sewage industry needs approximately DM50 billion to repair the damaged sewer lines.

These investments are absolutely necessary since the defective network could contaminate the ground water or the soil with pollutants. Furthermore, the effects of outside water in the sewer system would cause high operating costs. In the GDR, the situation is even more precarious since the first priority there is to connect more households to the public sewer system. According to Association data, only 73 percent of the citizens of the GDR are currently connected to public sewers. By way of comparison: In the FRG, the figure stands at somewhat more than 90 percent.

The differences between the two Germanies are even more striking in the area of water purification facilities. Fully 90 percent of the inhabitants of West Germany are connected to water purification systems, according to an Association report. In contrast, only 42 percent of those in the GDR are. There are reportedly 1,100 treatment facilities there, but some are defective. Of the nearly 9,000 water purification facilities in the FRG, approximately 81 percent are biological plants. Sixty-eight percent of the 8.9 billion cubic meters of sewage generated annually in the FRG is currently treated biologically. Twenty-nine percent of the sewage is treated in the next highest treatment level, chemical sewage treatment. Only three percent of the sewage here in the FRG is still treated by mechanical means, according to the Association.

The investments in water purification facilities are emphasized in the FRG governmental goal of treating the sewage of all citizens not only mechanically and biologically, but in the third treatment level of nutrient removal. Elimination of the nutrients phosphorus and nitrogen will require another DM14 billion. Also, catchment basins for treating rain water should be added to the sewer system, costing an additional DM25 billion, according to Association calculations.

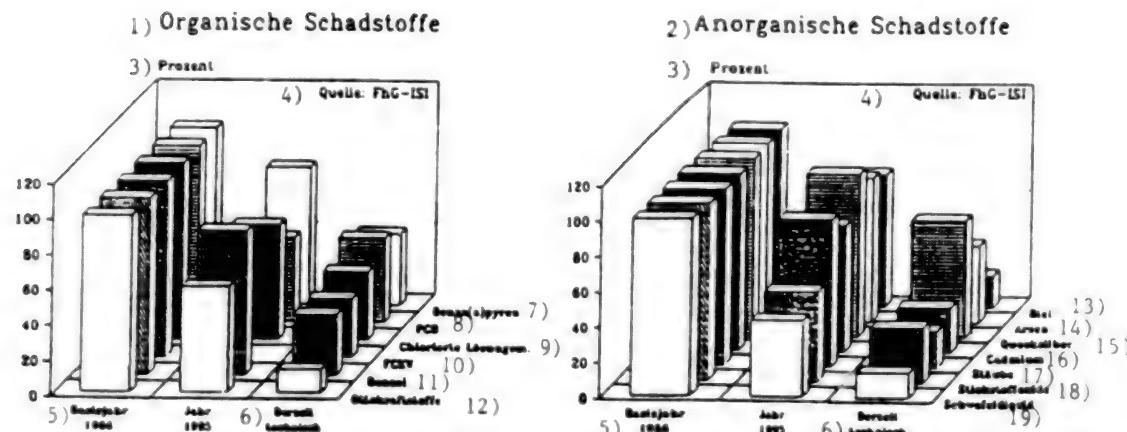
Automotive Emission Standards Policy Studied
90M102304 Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 525, 12 Apr 90 pp 15-17

[Text] To date, clean air policy has concentrated on reducing mass pollutants—including dust, carbon monoxide, sulfur dioxide, and nitric oxide—and achieved remarkable results. Thanks to the introduction of the three-way catalyzer for new gas-powered vehicles as of 1991 and the denitrification of power station fumes, a drastic reduction in nitric oxide emissions is also in sight. The drop in mass pollutant emissions means that other pollutants are gaining importance in clean air policy. A Fraunhofer Institute of System Engineering and Innovation Research (ISI) study commissioned by the Federal Research Ministry has shown to what extent emissions of some air pollutants that represent particular hazards to health and the environment could be reduced using the available technology. The study covered all sections of the national economy except transport. It will

assist the research ministry in orienting its subsidies for new environmental protection technologies.

A methodical procedure for evaluating the efficiency of environmental protection technologies had to be drawn up. First of all, emissions of the selected pollutants in 1986 were estimated, grouped according to source. The expected emissions for 1995 were then forecast, taking into account the impact of the emission control laws, voluntary agreements, individual commitments, and other factors. Finally, the emission level that would result from using the best available emission reduction methods was calculated for each pollutant and each category of sources. The emission reductions that could thus be achieved were termed technical reduction potentials and the quantities discharged after their elimination were termed residual emissions. The reduction potentials identified are based on the efficiency of currently available clean air technologies. Pollutants and source categories showing only slight differences between the emissions forecast for 1995 and the residual emissions indicate areas of research and development that require more intensive study in the future. Conversely, the demand for R&D is lower where the residual emissions lie well below the emissions expected for 1995; these figures tend rather to reveal any shortfalls in exploitation of the available technology. A large difference here, however, can also indicate the need to reduce the economic outlay involved in introducing these technologies, which would make for faster introduction on a wider scale.

The following table summarizes the main results of the study. They show that in the future, the use of new environmental protection technologies to combat air pollution should focus primarily on the chlorofluorocarbons (CFC's), followed by solvents and benzene. In addition, shortcomings are discernible in the technology used to precipitate the heavy metals that are also discharged in vapor form and so cannot be trapped in dust filters. This is the case with mercury and arsenic, for example. Highly toxic organic trace pollutants such as dioxines, furans, polychlorinated biphenyls, and polynuclear aromatic hydrocarbons having benzopyrine as a trace element must also be considered when future technologies are developed. Finally, it was confirmed that the technical feasibility of emission reduction in small and medium-sized systems often remains far below the level that can be achieved in large plants. New environmental protection technologies developed in the future should therefore take greater account of small and medium-sized systems and create efficient processes that they can use at a reasonable cost. The study also showed that currently available technologies for trapping dust and dustbound heavy metals in textile filters are extremely effective in reducing emissions. Fume desulfurization by the wash process [Waschverfahren], the selective catalytic reduction of nitric oxides in exhaust gases (SCR process), active carbon filters to trap polluting gases, controlled three-way catalyzers for motor vehicles, and gas displacement systems [Gaspendelsysteme] for



Key: 1) Organic pollutants 2) Inorganic pollutants 3) Percent 4) Source of information: Fraunhofer Society- ISI 5) Reference year 1986 6) Technically feasible at present 7) Benzopyrene 8) PCB's [polychlorinated biphenyls] 9) Chlorinated solvents 10) CFC's 11) Benzene 12) Gasoline-based fuels 13) Lead 14) Arsenic 15) Mercury 16) Cadmium 17) Dust 18) Nitric oxides 19) Sulfur oxides

fuel distribution and motor vehicle refuelling can reduce emissions by up to 90 percent. These are examples of successful technical developments achieved in the past; in the future, too, environmental protection technology will play a major role in air pollution control.

The research report may be obtained from the Fraunhofer Institute of System Engineering and Innovation Research (ISI), Breslauer Str. 48, 7500 Karlsruhe. Tel 0721/6809-217

Trends in Annual Pollutant Discharge and Currently Feasible Emission Levels for Selected Air Pollutants (excluding transport)

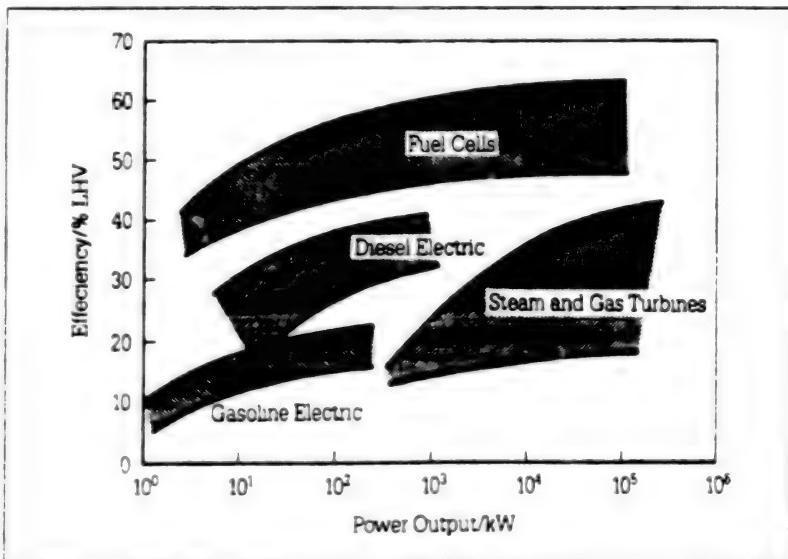
Pollutant	Unit of measurement	1986	1995	Technically feasible at present
Sulfur oxides	kt	2 120	915	300
Nitric oxides	kt	1 160	590	360
Dust	kt	480	400	100
Cadmium	t	35	25	9
Mercury	t	38	35	28
Arsenic	t	185	150	80
Lead	t	890	665	160
Gasoline	kt	100	60	13
Benzene	t	6 610	5 400	2 250
Chlorofluorocarbons ¹	kt	90	data unavailable	30
Chlorinated solvents	kt	245	160	95
Polychlorinated biphenyls	t	575	275	275
Benzopyrene	t	32	25	13

¹ Quantities consumed

t = tonnes

kt = 1 000 tonnes

Efficiency and power ranges of different technologies for power generation



Saenger Impact on Environment Analyzed

90M10232 Bonn WISSENSCHAFT, WIRTSCHAFT, POLITIK in German 2 May 90 p 2

[Article by Edelgard Bulmahn (SPD), deputy chairperson of the Bundestag board of inquiry set up to assess and evaluate the impact of technology, entitled: "High Acclaim for Hypersonic Technology"]

[Text] Whenever the word Saenger is mentioned, both the space lobby and the BMFT go into ecstasy. They maintain that "it will promote major, far-reaching technological advances, contribute significantly to ensuring the future of the FRG," and "set the next generation a major technological challenge." Hailed as "an outstanding means of producing technology" and as "a catalyst for new technologies," according to its supporters the Saenger pollutes "neither the environment nor the outer atmosphere," with its hydrogen propulsion. Yet the environment-friendliness of this feather in the German space community's cap is hardly sensational. In the opinion of many scientists, the Saenger project poses considerable environmental risks. According to the information currently available, neither damage to the ozone layer nor a worsening of the greenhouse effect can be ruled out. So far no reliable calculations or specific studies and tests are available on the impact that hypersonic aircraft and their exhaust gases will have on the atmosphere. Scientists are primarily worried about its allegedly environment-friendly hydrogen propulsion. The massive emission of water vapor into the stratosphere and mesosphere can considerably change the chemical composition of the air, increasing HO_x radicals and thus adversely affecting the photochemistry of the ozone. The formation of ice crystals and ice clouds as a result of water vapor emissions could also prove problematical, as they reflect not only sunlight but also the heat radiated by the earth, thus

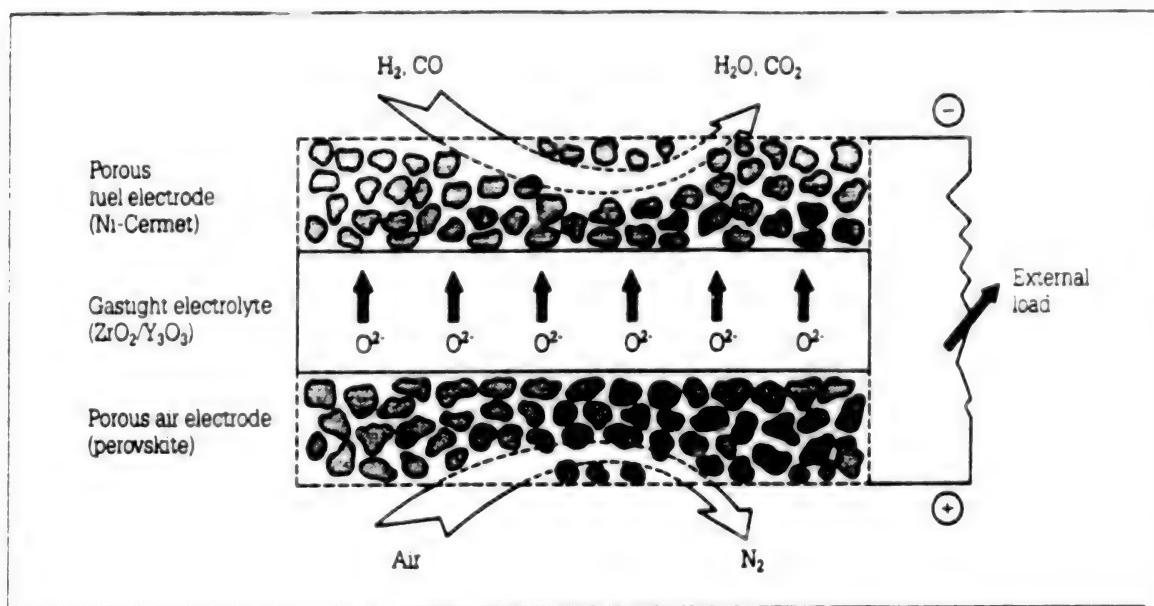
increasing the greenhouse effect. Furthermore, the combustion of hydrogen from the aircraft's tanks with atmospheric oxygen will certainly produce nitric oxide, more of which will also be generated as the Saenger's exhaust gases heat the surrounding air and the heavy compression pressure exerted by the hypersonic flows gives rise to gas kinetic heating. Nitric oxides, especially when discharged directly into the ozone layer during hypersonic flight, act as powerful catalysts in the process of ozone decomposition. The ozone layer is also damaged by the strong shock waves produced by the hypersonic aircraft along its flight path, which, at an altitude of about 25 km, is well inside the ozone layer. With flights taking place at relatively short intervals within very narrow corridors, it is only to be expected that the Saenger's detrimental effects will combine to create corridors with a drastically reduced ozone content, eventually causing permanent damage to the ozone layer.

Dornier Develops Solid-Oxide Fuel Cells

90M10240 Friedrichshafen DORNIER POST in English No 1, 1990 pp 40-41

[Article by Dr. Erich Erdle: "Solid-Oxide Fuel Cells—a New Technology for Future Energy Supply;" First paragraph is DORNIER POST introduction]

[Text] In the future, power plants will have to meet several new and/or increased demands, if they are to fulfil the global environment and climate requirements. Energy savings by the use of more efficient systems, reduced pollutant emission, and more decentralized implementation of combined heat and power systems are some important strategies that may be pursued. In the field of power generation, Dornier is developing a new technology, the solid-oxide fuel cell (SOFC), tailor-made for future necessities and based on system experience with fuel cells from space applications.



Functional principle of the FOBZ membrane

What is a Fuel Cell?

Fuel cells are energy converters which generate electric energy (low-voltage direct current) directly from the chemical energy of reactants (fuel gas and oxidant). As in familiar batteries and accumulators (lead accumulator), this energy conversion is effected via an electrochemical reaction. The systems differ in so far as the reactants are no integral system components which are gradually consumed during operation. In fact, fuel gas and oxidant are constantly supplied to the system (and the reaction products removed, with the fuel cell assuming only a converter function. An essential characteristic of electrochemical processes is that reactions comprise a current flow, with the electric charges being generally transported by ions in a part of the current circuit. In the SOFC, these are oxygen ions which diffuse to the fuel gas side through a ceramic electrolyte membrane. The driving force for this process is the difference in electrochemical potential between the air and the fuel gas side. The charge transported by the ions will be returned as electron current via an external load.

Other than thermodynamic cycles of heat engines, the reactions unfuel cells are not subject to the restrictions of Carnot efficiency. Therefore, significantly better efficiencies can be achieved than in conventional power generation processes and, consequently, correspondingly lower CO₂ emissions. But fuel cells offer more advantages still:

- lower pollutant emission
- low noise level (no rotating parts)
- excellent part-load capability (efficiency increases at partial load!)
- modular design (prefabrication possible, systems can be easily extended).

What Makes the SOFC So Special?

Compared with low-temperature fuel cells (alcaline, phosphoric acid, solid polymer fuel cells, operating temperature between 50 and 200°C) and molten carbonate fuel cells which work at about 600°C, the SOFC with its operating temperature of approximately 1000°C offers a series of specific advantages for power plants:

- genuine gas process, that is, no electrolyte management required
- air serves as oxidant (pure oxygen is not required)
- no noble-metal catalysts required
- not only pure hydrogen but also other combustible gases like CO, CH₄, natural gas, coal gas can directly be used for energy production
- favourable operating parameters for the endothermal conversion of methane/steam mixtures to obtain an H₂/CO gas mixture in the cells (internal reforming)
- high temperature of the waste heat (can be used for steam processes in major plant)
- no corroding media (such as carbonate melt)
- reverse operation possible (that is, the cells can be used for the reverse electrolysis process; Dornier has gathered considerable experience in this sector from the Hot Elly technology programme).

Technical Realization and State of the Development

As electrochemical processes take place at the surface rather than in the volume, technical units must consist of many membranes which are integrated to form so-called modules. Apart from the electrolyte, some other components are required, such as electrodes, connecting elements, and so on. In principle, the materials for all components are available today and have already been optimized and long-term tested for certain (tubular) cell configurations. New techniques had to be developed for

the synthesis and processing of the—mostly ceramic—materials because of the extreme electrical and mechanical requirements of the process.

A corresponding unit has already been integrated in the Dornier laboratory and tested for the more demanding reverse electrolysis process. This lab module consisted of 1000 single cells, connected in series and in parallel, and realized one of several tubular concepts which have been the only ones to be demonstrated in significant sizes to date. Lately, however, increased efforts have been directed towards the development of SOFC units in flat-plate design which are expected to reduce the specific investment cost due to higher power density and production advantages.

While in the past mainly hydrogen or a coal gas simulating synthesis gas (H_2/CO mixture) were used in the SOFC tests as combustible gases, operation with methane or natural gas is of increasing interest now. During a test conducted by Dornier, direct conversion of methane into electric energy by an internal reforming process in a SOFC was demonstrated for the first time during several thousand hours. The fuel gas was a mixture of methane, H_2 , CO , CO_2 , and steam. This special gas mixture simulated the conditions during operation with partial recycle of the exhaust gas which contains the required vapour for the methane reforming process in a sufficient quantity.

Outlook

The primary objective for further work is the development of SOFC systems generating 0.1 to 1 MW of electric power and process heat from natural gas until the mid-1990s. The estimated market volume for such systems is several gigawatts per annum—corresponding to several billion U.S. Dollars for Europe alone after the year 2000. It is remarkable that such systems would face considerable interest already today in Europe as well as in the United States and in Japan if the technical production goals were achieved. The most important task for the years to come is, therefore, the development of a low-price production technology which can guarantee high reproducibility and yield for the ceramic energy converting units.

The next development step could be the implementation of big multi-megawatt plants (for example, coupled with a combined cycle bottoming system for direct power generation from coal gas. Another possibility would be the development of special power-generation units for mobile systems. And yet another application are the socalled RFCS (Regenerative Fuel Cell Systems) energy storage systems where H_2 and O_2 gases are generated by electrolysis, stored without loss, and are later converted to electricity again in a fuel cell. In the case of safe technology one could envisage to combine the electrolysis and the fuel cell system in only one unit.

FINLAND

Research Indicates Bacteria Control PCP Pollution

90WN0210A Frankfurt/Main FRANKFUTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 11 Jul 90 p 8

[Article by bh]

[Text] Frankfurt, 10 July—The heavy pollution of soil with polychlorophenols (PCP's), a problem in the vicinity of paper mills, can be largely eliminated with the help of the bacterium *Rhodococcus chlorophenolicus*. According to observations of the Finnish microbiologist Mirja Salkinoja-Salonen of the University of Helsinki, this bacterium, one of the Actinomycetes, can completely degrade polychlorinated phenols into the end products carbon dioxide and chlorine. In the Finnish scientist's opinion, the problem with biological cleanup of PCP-contaminated soils using the microorganisms hitherto employed for this purpose is that, while toxic substances are indeed broken down, metabolic products can be formed which are at least as toxic, if not more so, than polychlorophenols. In contrast, the advantage of soil bioremediation with *Rhodococcus* is that the toxic substances are broken down into two less toxic gases which, for the most part, can escape from the soil into the atmosphere. The release of polychlorophenols into the environment was forbidden in Finland in 1984, but from the 1930's until that time, thousands of tons of the toxicants made their way into the soil. Even in places where no new polychlorophenol has been introduced into the soil in over 10 years, concentrations of 100 to 10,000 milligrams of 2,4,6-trichlorophenol and 2,3,4,6-tetrachlorophenol per kilogram of earth have been measured. Concentrations were even higher near paper mills, which flushed away tens of thousands of tons of polychlorophenols annually, contaminating rivers and lakes of the country. The Finnish microbiologist has not only investigated the detoxifying effect of *Rhodococcus* in the test tube, but has also tested it in the field. Peaty soils containing between 30 and 60 milligrams of polychlorophenols per kilogram of dry weight were inoculated with a hundred thousand to a hundred million bacteria per cubic meter. Sandy loam soils, in contrast, were treated with only 500 cells for the same volume of earth. In cases of less heavily contaminated soils, the polychlorophenol was broken down over a four-month period at a rate of 12 to 18 milligrams per kilogram dry earth and in the case of heavily contaminated soils at a rate of 130 to 250 milligrams per kilogram. The inoculated bacteria remained in the soil for a comparatively long time; they decreased within a year by a power of ten. The Finnish microbiologist hopes, however, to improve the survival rate of bacteria inoculated into the soil by selection of especially resistant strains. Furthermore, researchers are working on isolating the enzymes from *Rhodococcus* which are responsible for the breakdown of polychlorophenols. Then they want to find out whether it is possible to cleanse PCP-contaminated soils of the

harmful substances in an economically and ecologically practical way by treatment with the appropriate enzymes.

ITALY

Fiat Launches Environmental Projects

Waste Disposal

*90MI0244A Milan ITALIA OGGI in Italian
18 May 90 p 30*

[Article by Paolo Giovanelli: "It Will Be Quality Waste"]

[Text] A new project called "Phoenix System" for the disposal of industrial waste from Fiat's entire production cycle was presented yesterday at Marentino, a few kilometers from Turin. Currently, 80 percent of industrial waste from the Turin-based company is recycled, while the remaining 20 percent is disposed of in controlled dumps equipped with waterproof bottoms to prevent the dispersion of polluting materials.

With the Phoenix project, the recycled waste should rise to 90 percent and all waste will consist of inert materials that can be sent to normal public dumps without any problem. The development of the new system will involve 300 billion lire in investments and three years' work, once the competent authorities have approved the project. "Fiat produces eight percent of GNP but only one percent of all waste," stated Paolo Cantarella, director of Fiat Auto. He also stated that Italian industries produce only 43 percent of all waste against the 57 percent produced in the civilian sector.

The industrial waste from the Fiat group amounts to approximately 800,000 tonnes per year: four-fifths is composed of cardboard, scrap, waste, used oil, and solvents. These are used for new production after appropriate recycling. The last fifth is made up of various kinds of slush and mud. However, the Turin-based company has decided to expand its field of action; its suppliers will also be included in the Phoenix program, and they will be able to use Fiat systems to dispose of their waste.

"There is a basic philosophy behind the entire project," stated Cesare Annibaldi, Fiat's public relations director, "and it is not to pollute, not to waste, and to optimize resources." By doing so, nonpollution and recycling become a part of the production cycle. Fiat will invest 1.5 trillion lire in this field over the next three years.

"We started to face the problem 20 years ago and have made a great deal of progress. We have greatly decreased our water requirements by recycling, with reductions ranging from 50 percent in Pomigliano d'Arco, to 97 percent in our Florence plant. In the energy sector, our energy production rate has increased from 12 percent to 40 percent over 10 years, and we have started using

methane gas as a fuel almost exclusively, while a minimum amount of coal is used in our foundries," stated Enrico Dorigo, in charge of Fiat Auto's energy and ecology division.

Phoenix will be developed using only those technologies that have been tested, and which are safe and quick to apply. Phoenix will be divided into three main areas: The establishment of peripheral centers (called ecological islands) for waste pretreatment; a logistics system for waste transport; and the construction of integrated platforms for the destruction, recovery, and disposal of materials that cannot be recycled. Approximately 100 ecological islands are planned that will be closely connected to production centers, and will depend on five platforms located where they can function as collectors. The Phoenix system should be able to handle 200,000 tonnes of waste per year. At the island level, this waste will be divided into disposable waste and secondary raw materials that can be recycled. One-third of all materials entering the ecological platforms will leave them as inert waste. According to Fiat experts, the effect on the environment is practically nil. The company foresees that the project will be carried out in a little less than three years.

Catalytic Converters

*90MI0244B Milan ITALIA OGGI in Italian
14 May 90 p 8*

[Text] A million lire more for every Fiat automobile: This is the average price increase predicted for cars with catalytic converters. The catalytic converter is already obligatory for the big cylinder models. It will be required for all models beginning in 1993, when the European antipollution regulations go into effect, setting severe limits within the EEC similar to those currently in effect in the United States.

The clean car is the new technological front on which European and Japanese automobile manufacturers are competing. In Italy, the stakes have not gone unnoticed.

Fiat has been selling the "Europa" series for a year. These are automobiles and commercial vehicles with the brand names Fiat, Lancia, and Alfa Romeo, which are capable of meeting the "American" limits defined in advance by the EEC. For cars with cylinders greater than 1.4 liters, engines are equipped with catalytic converters, a lambda probe, and electronic fuel injection. It is the most advanced technological solution for the time being. For smaller cylinder models, the "Ecobox" device has been adopted. This ensures compliance with the less rigorous limits established by the EEC for cars with cylinders under 1.4 liters. Using unleaded gasoline, it is already possible at present to reduce the noxious exhaust fumes of carbon monoxide (CO), hydrocarbons (HC), and nitrogen oxides (NO_x) to minimum levels. However, notwithstanding the sensitivity of public opinion for the environment, the demand for "green" cars has not been enthusiastic. Nor is it expected that the demand for

automobiles with catalytic converters will explode as long as the law does not make these devices obligatory.

It remains to be seen if the electric Panda, which is now coming on the market after an experimental phase, will have more success; sales will begin in June.

In July 1989, Fiat signed a letter of intent to undertake a series of ecological commitments along with the Minister for the Environment. In addition to selling cars equipped with catalytic converters (the "Europa" series), Fiat committed itself to marketing the necessary parts to equip a number of automobiles already in circulation with catalytic converters. The medium-term commitments involve promoting the research and development of more advanced clean engine technologies, studying forms of alternative motor vehicles (urban buses in particular), and promoting solutions to lower industrial vehicle emissions.

The investment planned by Fiat is 1,200 billion lire over three years. Half of this sum, or 600 billion lire, is intended for the production of new automobile models capable of respecting even the strictest limits established by the EEC.

Ansaldo's Research, Development Projects Outlined

Research Centers, Projects

*90MI0250A Rome FINMECCANICA NOTIZIE
in Italian 31 Mar 90 pp 18-19*

[Text] By availing itself of the financial incentives under the program contract stipulated between IRI [Institute for the Reconstruction of Industry] and the Ministry for Special Intervention in the South, Ansaldo is investing more than 57 billion lire for the establishment of research centers and approximately 120 billion lire for research projects. The following is an outline of the principal initiatives planned:

"Combustion and the Environment" research center in Gioia del Colle (Bari), for the testing and qualification of high-performance innovative systems with an environmental impact, established at Termosud.

"Transport and Superconductivity" research center in Naples, designed and currently being completed at Ansaldo Trasporti, will perform research and experiments on components, equipment, and systems for electrified public transport and for the development of superconductivity and its applications.

Research project on new combustion systems, to be developed at the Gioia del Colle center.

Research project on transport, to be developed at the Naples center, covering: Functional vehicle qualification, the application of artificial intelligence technologies, vehicles and systems for signaling and automation used in advanced urban transport systems, signaling and

automation systems for lines with low traffic, and innovative materials and technologies for vehicles.

Superconductivity research project, to be developed at the Naples center, covering: Feasibility studies, materials and semifinished products, magnetic levitation, electromagnetic accumulation, filtration and separation, and magnets for spectroscopy.

In addition, other R&D activities to be set up in southern Italy are being identified within CRIS—Innovative Research Consortium for the South (composed of Ansaldo, Ansaldo ABB Componenti, Ansaldo Trasporti, Ansaldo Industria, Aerimpianti, and Termosud). These include combustion, railroad signaling, power activation, and combustible cells, to be developed in collaboration with the Sicilian Mineral Agency and with the participation of ENEA [Italian Committee for R&D of Nuclear and Alternative Energies], and the CNR [National Research Council].

All these initiatives will provide Ansaldo with infrastructures and skills that are unique in Italy and in the forefront in Europe, and that are also of great interest to Italian industry and the principal suppliers of services.

Environmental Project

*90MI0250B Rome FINMECCANICA NOTIZIE
in Italian 31 Mar 90 pp 19-20*

[Text] An agreement has been signed between Ansaldo and Agensud (Agency for the Promotion of the Development of Southern Italy) to develop the operational project for an integrated system to monitor air quality and environmental radioactivity in southern Italy.

The system has the following functions: To monitor the quality of the air and the evolution of acute polluting phenomena, both chemical and radioactive; set up a data base of the air's chemical, physical, and meteorological parameters and provide forecasts on the evolution of the phenomena; monitor the state of the environment, act as a support in planning protective measures and improvements; support protective measures for the health of the population, even in abnormal situations; and act as an interconnecting and integrating system for existing and projected local air monitoring networks, by organizing and integrating the currently available data.

The network will be based on three levels of data centralization: A provincial level, responsible for the collection, preprocessing, and transmission of data; a regional level, responsible for the management of outlying stations, data processing, and interface functions with local users as well as communications with the national center; a central level, in which the interregional operations center will form the basis of southern Italy's environmental observatory, with the function of obtaining preprocessed data from the regional centers, organizing it in a data base, processing it, and managing

the user interface. The central level will therefore assume a technical support role in environmental planning and monitoring.

NORWAY

Minister on Energy Economization, Environment

90WN0242B Oslo AFTENPOSTEN in Norwegian
19 Jul 90 p 3

[Article by Hanne Skartveit including interview with Oil and Energy Minister Eivind Reiten; place and date not given: "More Oil Does Not Give a Worse Environment"]

[Text] Oil and Energy Minister Eivind Reiten wants to make use of market forces to obtain energy economization (ENOK). He thinks that increased oil extraction is not obtained at the expense of the environment, and that the environmental organizations do the environment a disservice when they oppose it.

Reiten is in agreement with the party line on the EC question, but he sees many of the advantages of making use of the international community to a greater extent. Reiten has been a cabinet member for nine months, and he appears to be doing well. He was the director of Norsk Hydro for three years before becoming a cabinet member.

EC Clash?

[Skartveit] Can it happen that Reiten the businessman will clash with Reiten of the Center Party (Sp) on the EC question?

[Reiten] There certainly is a clash, but not in the sense that I am in doubt on the EC membership question. I have a tendency to want to make use of international division of labor and the dividing up of international trade more than they traditionally desire in the Sp. But that clash is no more obvious on the EC matter than on other matters. Indeed, the Sp people will claim that I am too liberal and business oriented on a number of things. I don't think that very large portions of the party believe that all problems can be solved by increasing the government budgets.

ENOK Important

According to Reiten, the consumption of energy in Norway is already declining. "We have gotten the ENOK work going through the arranging of subsidies for the municipalities and industries. They are getting 20 percent of their investments in energy-saving projects covered. Up to now in 1990, 150,000,000 kroner have been allocated to that arrangement. We expect that, in the long run, that measure will reduce energy consumption by 500 GWh per year, and that is a lot when we realize that the Alta watercourse alone produces 800 GWh a year," he says.

Incomprehensible

However, he thinks that it is incomprehensible that the government has to engage in such subsidization operations.

"Such investments are profitable in themselves, but the mentality in Norway is not such that people think of saving energy," he sighs.

Reiten wants to make use of market forces to influence the individuals' housekeeping.

[Reiten] I am the first Energy Minister who does not give warning of a jump in prices. We have liberalized the market. Now it is supply and demand that determine prices. The individual energy plants themselves are responsible to their customers. I think that customers get more price conscious as a result of that, and consequently they are more conscious of their consumption of energy.

Oil and the Environment

Reiten denies that the cancellation of the self-imposed limitations on oil production is harmful to the environment. "The accusations by the environmental organizations are entirely due to a misunderstanding. The restrictions on oil production were introduced for reasons having to do with price. Protection of the environment considerations were never in the picture. I think the environmental organizations are doing the environment a disservice with their criticism. The way to protect the environment is to have high, stable prices on the world market. It is not true that the less oil we produce, the less oil there is in the world," he says.

Gas Deliveries

[Skartveit] How do you think Norway can contribute to reducing the consumption of fossil fuels in Europe?

[Reiten] The best thing would be for us to set up a long-term program of gas deliveries to East Europe. If we arrange for deliveries from the end of the 1990's and for 40 or 50 years after that, the result will be that they will be able to replace coal with gas. That will do a lot more for the protection of the environment than an individual action here in this country. There is contact at present between Norwegian suppliers of gas and East European authorities. We are the sympathetic intermediaries who are able to bring sellers of gas and East Europeans in contact with each other, and it is important to bring that about.

Looking After Children and Holidays

An increase in the size of the Reiten family has just occurred. He said that he would take his parental leave of absence a bit at a time during the summer.

[Skartveit] Is it hard to combine the jobs of a cabinet member with that of the daddy of a small child?

[Reiten] No, it seems to be going well. I say 'no' to more lunch invitations and evening events than I would have done if I were living alone in one room, but I don't feel

that my job is suffering because of that. My wife also thinks that things are going well, and she is perhaps the best judge of that matter.

In early August 1990, Reiten and his family will go to their cottage in Drangedal.

"We swim, fish and get completely relaxed there. Both my wife and I travel a lot in connection with our jobs, so it is a delight to do as little as possible when on vacation," Reiten says.

SWEDEN

Kattegat Threatened With Worsening Eutrophication

90WN0239 Stockholm SVENSKA DAGBLADET
in Swedish 21 Jul 90 p 6

[Article by Tomas Agdalen: "New Occurrence of Worsening Eutrophication Threatens West Coast"]

[Text] The Swedish west coast is going to be hit by extensive worsening eutrophication in the fall of 1990. As a result of this summer's rain, all of the fertilizer has washed out to sea, and the algae are blooming madly.

That is what Senior Lecturer Marianne Pedersen, a marine biologist at the Institute for Physiological Botany at Uppsala University, says.

Smelled in June

Before the summer of 1990 arrived, she had bad premonitions that now have turned into reality. During the dry summer of 1989, the flow of water from rivers and streams was low. The fertilizer was left on the land. Therefore this summer's prolonged rain has given the sea a double dose of pollution.

"Worsening eutrophication is going to hit especially hard in the Kattegat. We said that as early as June 1990 when we were in the waters around Bastad to dive and get samples. Even that early, we were aware of how badly it smelled, and how bad was it going to be in the fall, then?" we thought. "There is a tremendous number of algae that will decompose in the fall of 1990," Marianne Pedersen says.

She talked about the annual fine-fibered algae. The conditions for their growth are extremely good this year. There is nourishment for them. As a result of the movement of the winds over the ocean, even the algae that are under the water get light.

"The algae grow furiously. In the fall they die and sink to the bottom. A process of decomposition that uses oxygen is started. A sediment spreads over the bottom and the bottom dies," Marianne Pedersen goes on to say.

Bottom Is Soft

The result of that development is that the hard bottom, consisting of stones and rocks on which various kinds of algae grow, is changed into a soft bottom.

"If one realizes that 97 percent of all the kinds of animals in the ocean live at the bottom during some period in their life cycles, one will understand how important it is for there to be abundant vegetation on the bottom. The various species depend on that to get food and conceal themselves," says Mats Bjork, a Ph.D. candidate who works with Marianne Pedersen at the same institution.

He thinks that comparison with a forest gives a clear picture of the situation of animals in the ocean.

"The animals would not be able to protect themselves if the trees and bushes disappeared. They would also quickly die of hunger."

Marianne Pedersen has had the advantage of being able to follow the ocean's development on the west coast since the 1960's. When she and her group, together with the Goteborg University and Kristineberg's Marine Biological Station in Lysekil, set out on an expedition during the summer of panic in 1988, with deaths of seals and poisonous algae, she imagined that there would be less change. However, the opposite of that was what she observed.

A bit out in the ocean—Morup's bank off Falkenberg, for example—it was just the same. There was vegetation there at a depth of 26.5 meters, precisely as in the 1960's, but a big difference was found closer to the coast. The vegetation came to an end at a depth of 12 or 13 meters.

"The vegetation had shot up about 10 meters since I had last been in that area," Marianne Pedersen says.

Two Effects

In the summer of 1989, the group of research workers saw that overfertilizing had two distinct effects. On the one hand, there was no vegetation deep down, while, on the other hand, a thinning out had taken place among the algae. They floated around or grew on the bottom with one-meter spaces between them.

It was that year that many people shouted "Hurrah!" and came to the conclusion that the ocean was recovering. But the worsening eutrophication actually could not be seen from the surface of the water.

To study a thinning out and its cause more closely, the group of research workers went to Helgoland, which is located at the mouth of the German Elbe River. Among other things, the water of the Rhine runs out there. There was no life in that area—only sediment.

"We thought we could look into the future. Thinning out was already beginning at four meters. That is the way it is going to be on our west coast in 10 years," Marianne Pedersen predicts.

It is precisely that thinning out that is the most important alarm signal, and to bring it to a halt we humans will have to put a stop to the transporting of fertilizer from the land.

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